RECLAMATION

Managing Water in the West

Final Environmental Assessment

Delano-Earlimart Irrigation District and Rosedale-Rio Bravo Water Storage District Banking Program 2010-2026

EA-09-92

U.S. Department of the Interior
Bureau of Reclamation
Mid Pacific Region
South-Central California Area Office
Fresno, California

December 2009

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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List of Acronyms and Abbreviations

AEWSD	Arvin Edison Water Storage District
af	acre-feet
af/y	acre-feet per year
APE	area of potential effects
CAA	Clean Air Act
cfs	cubic-feet per second
Conjunctive Use Program	RRBWSD's Groundwater Storage, Banking, Exchange, Extraction & Conjunctive Use Program
CVC	Cross Valley Canal
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
DEID	Delano-Earlimart Irrigation District
DWR	California State Department of Water Resources
EA	Environmental Assessment
ESA	Endangered Species Act
FKC	Friant-Kern Canal
FWCA	Fish and Wildlife Coordination Act
ITA	Indian Trust Assets
KCWA	Kern County Water Agency
KTWD	Kern-Tulare Water District
MBTA	Migratory Bird Treaty Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
Reclamation	Bureau of Reclamation
RRBWSD	Rosedale-Rio Water Storage District
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SSJMUD	Southern San Joaquin Municipal Utility District
State	State of California
SWID	Shafter-Wasco Irrigation District
SWP	State Water Project
USFWS	U. S. Fish and Wildlife Service

Section 1 Purpose and Need for Action

1.1 Background

The State of California (State) has experienced periods of reduced water availability due to hydrologic and/or regulatory constraints. Central Valley Project (CVP) water service contractors have experienced reduced water supply allocations in the preceding years. The hydrologic conditions for 2010 are not yet known, but it is possible that CVP contractors will need to supplement supplies to meet demands because of past dry years and low reservoir storage levels. Water contractors strive to be proactive and prepare for varying water supply conditions to the extent possible so that agricultural or urban water supply needs can be met regardless of the water availability conditions. In order to maximize the beneficial uses of their varied water supplies, Friant Division CVP contractors pursue water supply and management options to offset any potential effects resulting from hydrologic and/or regulatory constraints. For instance, the ability to bank water supplies that exceed the current demand is one strategy that can be useful. The flexibility in the timing of delivery afforded by water banking would be advantageous to water agencies during the summer growing season when water demand is at its peak.

Delano-Earlimart Irrigation District

Delano-Earlimart Irrigation District (DEID) is located on the border between Tulare and Kern Counties on the eastern side of the San Joaquin Valley, approximately 10 miles from the Sierra Nevada foothills. DEID has a CVP contract with the Bureau of Reclamation (Reclamation) and receives surface water from the Friant Division via the Friant-Kern Canal (FKC).

Rosedale-Rio Bravo Water Storage District

Rosedale-Rio Bravo Water Storage District (RRBWSD), located west of the City of Bakersfield, was established in 1959 to develop a groundwater recharge program to offset overdraft conditions in the regional Kern County aquifer. RRBWSD's Groundwater Storage, Banking, Exchange, Extraction & Conjunctive Use Program (Conjunctive Use Program) currently manages approximately 300,000 acre-feet (af) of stored groundwater in the underlying aquifer, which has an estimated total storage capacity in excess of 930,000 af. RRBWSD acquires water for its Conjunctive Use Program from the Kern River, FKC (when available), and the State Water Project (SWP) through a water supply contract with Kern County Water Agency (KCWA). RRBWSD certified a Final Master Environmental Impact Report covering the Conjunctive Use Program in July 2001, and is hereby incorporated by reference.

1.2 Public Review Period

Reclamation made the Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact available for public comment from October 20 through October 29, 2009, and subsequently extended the closing date until November 5, 2009. Reclamation received a set of comments (attached in Appendix C) and will address those considered to be substantive in the appropriate sections within this Final EA.

1.3 Purpose and Need

DEID desires to maximize the beneficial use of its varied water resources by banking supplies that exceed the current demand to its immediate needs in RRBWSD on an annual basis. DEID needs to supplement its conjunctive use program, protect the groundwater resources within its service area, and mitigate possible contract water supply losses in future years due to drought and/or potential losses associated with regulatory constraints placed on Friant Division CVP operations. The use of CVP water for the purpose of groundwater banking outside the contract service area provides DEID with operational flexibility and facilitates better management of its CVP water supply.

By banking DEID's surplus water supplies in its facilities, RRBWSD would be able to help alleviate some of the groundwater overdraft conditions to the aquifer underlying the district by requiring that a portion of DEID's banked water remain in the aquifer for recharge purposes.

1.4 Scope

This EA has been prepared to examine the impacts on environmental resources as a result of banking excess DEID Class 1 and Class 2 CVP water supplies, in addition to any available 215 Water (unstorable flood flows, as defined in Section 215 of the Reclamation Reform Act {RRA}) from Friant Dam in RRBWSD's existing water banking facilities for future return to DEID. The FKC, Cross Valley Canal (CVC), and other existing infrastructure would be utilized in order to convey the banked and return water.

The action area is located in the southeastern portion of the San Joaquin Valley, in southern Tulare County and parts of Kern County. Aside from DEID and RRBWSD, other agencies could be involved with the Proposed Action as possible exchange partners, such as, but not limited to: Arvin-Edison Water Storage District (AEWSD); Kern-Tulare Water District (KTWD); Shafter-Wasco Irrigation District (SWID); and Southern San Joaquin Municipal Utility District (SSJMUD). Refer to Figure 1 below for an overview map of the action area.

The banking program between DEID and RRBWSD would begin in April 2010 and be in effect throughout DEID's long-term CVP contract which expires at the end of February 2026; therefore, the temporal scope of this EA would be for 17 years.

This EA has also been prepared to examine the potential impacts to the affected environment associated with the No Action Alternative.

1.5 Reclamation's Legal and Statutory Authorities and Jurisdiction Relevant to the Proposed Federal Action

Several Federal laws, permits, licenses and policy requirements have directed, limited or guided the National Environmental Policy Act analysis and decision-making process of this EA and include the following:

1.5.1 Reclamation Reform Act

The RRA of 1982 applies to all irrigation land within an irrigation/water district, which has a water service contract with Reclamation and is subject to the acreage limitation and full-cost provisions of Reclamation law. Acquisition of irrigation water by exchange shall not subject the non-CVP users of such water to Federal Reclamation law and the associated rules and regulations.

1.5.2 Central Valley Project Water Service Contracts

Section 3(d) of CVP Water Service Contracts identifies the use of CVP water outside the Contractors' service area. This section states that "Groundwater recharge programs, groundwater banking programs, surface water storage programs and other similar programs utilizing CVP water or other water furnished pursuant to the CVP contract conducted outside the Contractors' service area may be permitted upon written approval of the Contracting Officer, which approval will be based upon environmental documentation, CVP water rights, and CVP operation concerns. The Contracting Officer will address such concerns in regulations policies, or guidelines."

1.5.3 Contracts for Additional Storage and Delivery of Water

Central Valley Project Improvement Act (CVPIA) of 1992, Title 34 (of Public Law 102-575), Section 3408(c), Additional Authorities authorizes the Secretary of the Interior to enter into contracts pursuant to Reclamation law and this title with any Federal agency, California water user or water agency, State agency, or private nonprofit organization for the exchange, impoundment, storage, carriage, and delivery of CVP and non-CVP water for domestic, municipal, industrial, fish and wildlife, and any other beneficial purpose, except that nothing in this subsection shall be deemed to supersede the provisions of section 103 of Public Law 99-546 (100 Stat. 3051).

1.5.4 Water Quality Standards

Reclamation requires that the operation and maintenance of CVP facilities shall be performed in such a manner as is practical to maintain the quality of raw water at the highest level that is reasonably attainable. Water quality and monitoring requirements are established annually by Reclamation and are instituted to protect water quality in Federal facilities by ensuring that imported (including non-CVP) water does not impair existing uses or adversely impact existing water quality conditions. These standards are updated periodically and could be modified at Reclamation's discretion on a case-by-case basis. The water quality standards are the maximum concentration of certain contaminants that may occur in each imported source of water. The water quality standards for imported water to be stored and conveyed in Federal facilities are currently those set out in Title 22 of the California Code of Regulations, which Reclamation has adopted and incorporated into their water quality monitoring requirements, *Policy for Accepting Non-Project Water into the Friant-Kern and Madera Canals*, (see Appendix A).

1.6 Potential Issues

This EA will analyze the affected environment of the Proposed Action in order to determine the potential and cumulative impacts to the following: water resources, climate change, land use, biological resources, cultural resources, Indian Trust Assets (ITA), environmental justice, socioeconomics, and air quality.

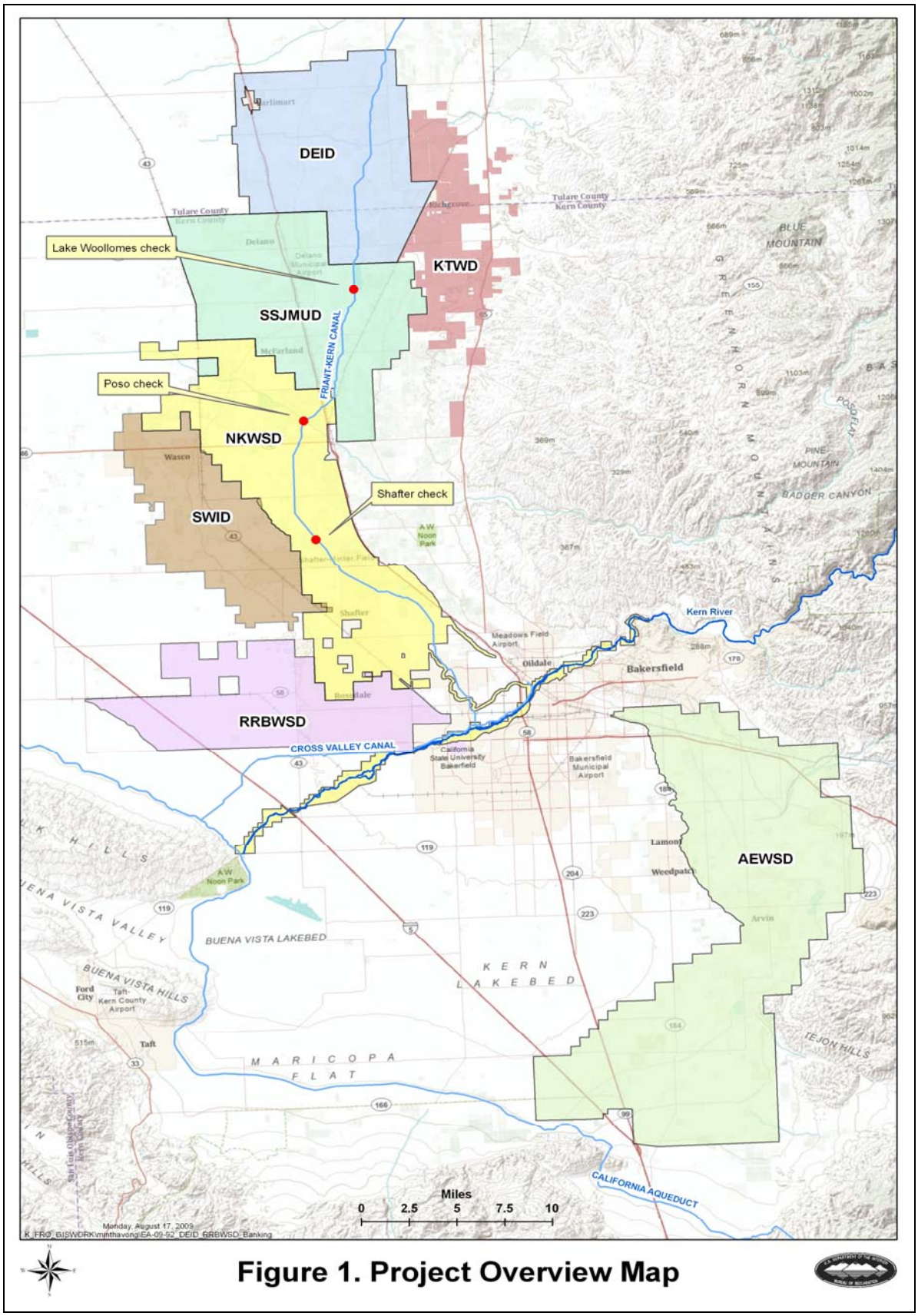

Figure 1. Project Overview Map

Section 2 Alternatives Including the Proposed Action

2.1 Alternative A: No Action

Under the No Action Alternative, Reclamation would not approve DEID's delivery of its CVP supplies (including any available 215 Water) in excess to its immediate needs to be banked in RRBWSD. DEID would not be able to maximize the benefits of these supplies by storing it in RRBWSD for future return and use during dry hydrological years.

2.2 Alternative B: Proposed Action

Under the Proposed Action, Reclamation would approve DEID's delivery of its CVP and 215 Water (when available) supplies for banking outside of their service area boundary in RRBWSD. DEID would deliver up to 80,000 af per year (af/y) to RRBWSD for banking from March 2010 through February 2026. DEID would be allowed to store up to 100,000 af maximum at any one time, and RRBWSD would return up to 10,000 af/y to DEID upon request. DEID's water would be delivered to RRBWSD by one or more of the following methods:

- FKC to CVC via the FKC/CVC Intertie or the AEWSD Intake Canal/CVC Intertie then to RRBWSD turnouts off of the CVC;
- FKC to Kern River (FKC terminates into the Kern River) where the water is then considered to be delivered to RRBWSD;
- DEID could transfer a portion of its CVP supply to KTWD under the Accelerated Water Transfers Program (FONSI/EA-05-92 and 05-01), and in turn KTWD's balance of banked water in RRBWSD would be reduced and a like amount would be credited to DEID (this action would require prior Contracting Officer approval); and
- delivery of DEID water to RRBWSD could be completed via exchanges that may include other districts or by other mutually agreeable points of diversion which may require additional environmental review.

Banking by DEID within RRBWSD would be on an up to 2:1 ratio; where a 1:1 banking to return ratio would be "bucket for bucket" (minus a six to ten percent loss), and a ratio of 2:1 would involve the return of 1 af to DEID for every 2 af of water banked in RRBWSD. For an up to 2:1 banking arrangement, DEID intends to provide 215 Water and/or non-CVP water to account for the remaining balance of the arrangement (1 af of the banked water would be CVP water while 215 Water and/or non-CVP water would make up the rest of the up to 2 af). At this time, Reclamation has not yet developed the necessary contractual regulations, policies, or guidelines for groundwater banking to include 215 Water being left behind in a 2:1 banking to return ratio. Additional environmental review may be required regarding the leave-behind water(s) as part of the 2:1 banking.

Upon request, RRBWSD would use their three existing extraction wells to pump the banked water for return to DEID via the reverse mechanism as described above for the delivery of DEID water to RRBWSD, and/or one or more of the following methods, all inclusive:

- pumped into the CVC then into the AEWSD Intake Canal for exchange with AEWSD, in return, AEWSD would make available a like-amount of its CVP supply to DEID via the FKC; and
- pumped into the CVC then into the FKC; through an operational exchange facilitated by the Friant Water Authority (FWA), the water to be returned to DEID would be exchanged with AEWSD, KTWD, SWID, and other potential exchange partners with access to the FKC where a like-amount of CVP water would then be made available to DEID via the FKC (refer to Appendix B for DEID agreement with FWA for operational exchanges).
- After the return water is pumped into the CVC and then into the FKC, physical delivery of the water to DEID could be delivered through the use of pump-back facilities at three check structures (Shafter Check, Poso Check, and Lake Woollomes Check) located along the FKC (see Figure 1). The use of pump-back facilities could also provide additional exchange opportunities (both direct and/or indirect via operational exchanges) with other districts having access to the FKC.
- RRBWSD could exchange some of their Kern River supplies to a CVP contractor with access to the Kern River, such as AEWSD or SWID, and in turn that district would make a like-amount of its CVP supply available to DEID from the FKC.
- RRBWSD could exchange some of its SWP supply with a CVP contractor having access to the CVC, such as AEWSD or SWID, and in turn that district would make a like-amount of its CVP water available to DEID from the FKC.
- RRBWSD could return the water to DEID by other mutually agreeable points of diversion through existing CVP and non-federal facilities and exchanged with other CVP or non-CVP contractors; which may be subject to additional environmental review.

The Proposed Action would occur if and when capacity exists in the facilities involved with the banking program and the quality of such water during return is equal to or better than the water quality standards of Title 22 and/or Reclamation's water quality monitoring requirements. In addition, the following conditions would also apply:

- DEID's CVP water would be used by RRBWSD for recharge purposes within the Friant permitted place-of-use;
- additional water quality monitoring near AEWSD's turnout from the FKC;
- acreage limitation and full-cost provisions of RRA may apply;
- no land conversions that would change the land use patterns of the cultivated or fallowed fields that do have some value to listed species or birds protected by the Migratory Bird Treaty Act (MBTA);
- neither banked water or returned water would be used to place untilled or new lands into production in either DEID or RRBWSD;
- the delivery and return of DEID's water would not impact the FKC and CVC or interfere with their respective ability to deliver water under normal operations; and
- the banking program would not require the new construction or modification of any conveyance or diversion facilities.

Section 3 Affected Environment and Environmental Consequences

3.1 Water Resources

Climate change is an environmental trend and for the purpose of this EA refers to changes in global or regional climate over time and is expected to have some effect on the snow pack of the Sierra Nevada and the run-off regime. Current data are not yet clear on the hydrologic changes and how they will affect the Friant Division of the CVP as well as other federal, state and local river operations within the action area. Water allocations are made dependent on hydrologic conditions and environmental requirements. Since operations and allocations are flexible, any changes in hydrologic conditions due to climate change would be within the respective operations' flexibility and therefore water resource changes due to climate change would be the same with or without the Proposed Action.

3.1.1 Affected Environment

3.1.1.1 Friant Division CVP Contractors

Arvin-Edison Water Storage District AEWSD has a contract with Reclamation for 40,000 af/y of Class 1 and 311,675 af/y of Class 2 CVP supplies. The Class 2 supply comprises a large fraction of their contract allocation; however, this supply is variable. The district manages this supply by using an underlying groundwater reservoir to regulate water availability and to stabilize water reliability by percolating water through five spreading basins. AEWSD takes Friant CVP water from their Intake Canal located at the terminus of the FKC and serves landowners within its district through 45 miles of lined canals and 170 miles of pipeline.

AEWSD has historically engaged in Article 5 exchanges of CVP water with Cross Valley contractors, such as KTWD. Up to 66,096 af/y of the Cross Valley contractors' CVP water is delivered to AEWSD. The water is diverted from the Sacramento-San Joaquin River Delta through the California Aqueduct and to the CVC. In exchange, the Friant CVP water that would have flowed down the FKC to AEWSD is taken upstream by a Cross Valley contractor off of the FKC. Up to 70,984 af/y of Friant CVP water is delivered to the Cross Valley contractors. However, due to changing hydrologic conditions and/or feasibility issues, AEWSD no longer is able to partake in Article 5 exchanges with most of the Cross Valley contractors.

In 1997, AEWSD entered into a long-term Water Management Program with Metropolitan Water District (MWD) of southern California, which was subsequently amended in 2002. Under the arrangement, AEWSD agreed to bank MWD's SWP supplies during years when MWD has SWP supplies which exceeded its service area demands and return said water in certain drought years when MWD needs supplemental water to meet its in-district demands. AEWSD takes delivery of MWD's SWP via the California Aqueduct and/or the CVC, and banks the water to the underlying aquifer through spreading ponds. Upon request, AEWSD would extract the banked water for delivery to MWD via the California Aqueduct. The project was analyzed in AEWSD's May 1996 Negative Declaration.

Delano-Earlimart Irrigation District DEID delivers surface water from the CVP to approximately 400 landowners on 56,500 acres of land in southern Tulare County and northern Kern County through a completely piped system. Farmers within DEID pump groundwater from private wells when surface water is not available to meet irrigation needs. DEID serves agricultural water supplies only. On March 1, 2001 DEID entered into a long-term renewable contract with Reclamation for 108,800 af/y of Class 1 and 74,500 af/y of Class 2 CVP water. DEID obtains its CVP water from its turnouts located off the FKC and delivers water to their customers through 172 miles of pipeline. In addition, DEID enters into annual contracts with Reclamation for 215 Water when available.

Kern-Tulare Water District KTWD depends on surface water delivery for the production of perennial crops. The district serves roughly 19,000 acres of irrigated farmland. KTWD has a CVP contract with Reclamation for 53,300 af/y. KTWD serves only agricultural water to their customers. The district's facilities consist of 12 pumping plants, four reservoirs, and roughly 65 miles of pressure pipeline to deliver water to their customers upslope of the FKC. Currently, 91 percent of all crops in KTWD are irrigated with the micro-sprinkler irrigation method, which is very efficient and does not require any spill or tailwater recovery systems.

KTWD is a Cross Valley contractor within the Friant Division of the CVP, so its supplies are physically delivered from the Sacramento-San Joaquin River Delta. Due to their physical locality, KTWD would have to reverse pump their water up the FKC or enter into Article 5 exchanges with AEWSD for Friant CVP water from the FKC. In addition, they also have a contract with the City of Bakersfield for roughly 23,000 af/y of Kern River water. As with their CVP supplies, the only way for KTWD to get their Kern River water is through exchanges and/or transfers with a CVP contractor with access to the Kern River (such as AEWSD or SWID) for Friant CVP water, or by reverse pumping up the FKC under a Warren Act contract.

Shafter-Wasco Irrigation District SWID has a contract with Reclamation for 50,000 af/y of Class 1 and 39,600 af/y of Class 2 CVP water from the Friant Division. The district does not have any other long-term sources of surface water supplies and only provides water for agriculture to its customers. SWID obtains its CVP water from two turnouts off of the FKC at mileposts 134.4 and 137.2. SWID's distribution system is 0.3 miles of lined canals and 117 miles of pipeline. SWID does not own or operate any water storage facilities or groundwater extraction facilities. Landowners pump groundwater to make up any shortfalls if SWID can't provide sufficient surface water supplies.

Southern San Joaquin Municipal Utility District SSJMUD has a contract with Reclamation for 97,000 af/y of Class 1 and 50,000 af/y of Class 2 CVP water from the Friant Division. The district does not have any other long-term surface water supplies. SSJMUD obtains its CVP water from nine diversion points off of the FKC between mileposts 119.6 and 130.4. The district's distribution system is comprised of 158 miles of pipeline. In addition, SSJMUD operates eleven regulating reservoirs that provide groundwater recharge; however, the district does not own or operate any groundwater extraction facilities. Landowners within the district resort to groundwater pumping during times where SSJMUD can't provide adequate surface water supplies.

3.1.1.2 Non-CVP Contractors

Rosedale-Rio Bravo Water Storage District RRBWSD is a SWP contractor and member unit of the KCWA. The district does not provide any municipal and industrial water to customers within its service area and irrigation water used within the district is presently supplied from landowner wells pumping from the groundwater basin. RRBWSD owns and operates over 2,000 acres of recharge ponds capable of recharging up to 600 cfs. RRBWSD manages the portion of the regional Kern County groundwater subbasin that is within its boundaries.

RRBWSD acquires water for recharge purposes from the Kern River through a water service agreement with the City of Bakersfield, water from the FKC as available, and from the SWP through a water service contract with the KCWA, which holds a master contract with the State Department of Water Resources (DWR). All of the water received by RRBWSD is used for groundwater replenishment in established recharge basins within its service area.

3.1.1.3 Groundwater Resources

The project area overlies the Tule and Kern County Groundwater Subbasins of the San Joaquin Valley Basin, and confined within the Tulare Lake Hydrologic Region. In general, groundwater quality throughout the region is suitable for most urban and agricultural uses with only local impairments. The primary constituents of concern are high nitrate, arsenic, and organic compounds (DWR, 2005).

Tule Groundwater Subbasin DEID is located almost entirely within the Tule Groundwater Subbasin, which covers a surface area of approximately 467,000 acres and spans across Tulare County. Changes in the Tule Groundwater Subbasin level is evaluated by DWR by quarter township and computed through a custom DWR computer program using geostatistics, also known as kriging. On average, the subbasin water level has increased by four feet total from 1970 through 2000 (DWR, 2005). Groundwater recharge is primarily from stream recharge (White River, Tule River, and Deer Creek) and from deep percolation of applied irrigation water (DWR, 2005).

Groundwater levels underlying DEID have gradually stabilized since importation of surface water supplies. The drought period between 1987 through 1993 was an example for the need to have a conjunctive use program in the DEID area, as growers were forced to rely mostly on groundwater. In that seven year span, the average depth to groundwater dropped 27 feet (Brogan, 2006). Currently, about 22 percent of the applied irrigation requirements within DEID are met by water users pumping from the groundwater basin. The total amount pumped for agricultural use varies according to the amount of surface water available. There are about 200 wells located throughout DEID all owned by private landowners (DEID, 2003).

Kern County Groundwater Subbasin The subbasin has a surface area of just under two million acres and underlies most of western Kern County, including RRBWSD and AEWSD. Natural recharge is primarily from stream seepage along the eastern subbasin and the Kern River, and recharge of applied irrigation water; however, is the largest contributor (DWR, 2006). Review of the subbasin indicate that except for seasonal variation resulting from recharge and pumping, the groundwater levels wells have remained relatively unchanged from 1970 to 2000 (DWR, 2006). However, the Kern County Groundwater Subbasin has been identified by DWR

as being critically overdrafted. By definition, "a basin is subject to critical conditions of overdraft when continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economical impacts (Reclamation, 2005)." In addition to other water providers in Kern County, RRBWSD adopted an AB 3030 water management plan in 1994 to help offset overdraft conditions in the county. RRBWSD is also a participant in the Kern Fan Monitoring Committee that was established to monitor the impacts of banking programs located on the Kern Fan. The purpose of the committee is to insure that projects do not result in adverse impacts to water levels, groundwater quality, or land subsidence.

3.1.1.4 Conveyance Facilities and Rivers

Cross Valley Canal The CVC, a locally-financed facility completed in 1975, extends from the California Aqueduct near Tupman to Bakersfield. It consists of four reaches which have capacities ranging from 890 cfs through the first two pumping plants to 342 cfs in the unlined extension near Bakersfield. The CVC is a joint-use facility operated by the KCWA that could convey water from the CVC to the Kern Water Bank, California Aqueduct, the City of Bakersfield, the Berrenda Mesa Property, the Kern River channel, the Pioneer Banking project, various member units of KCWA and other districts who have access to the CVC.

In 2005, KCWA finalized an Environmental Impact Report for the CVC Expansion Project (SCH#2004081183) which included new pump stations, new turnouts, increased conveyance capacity of the CVC by raising sections of the canal, and the FKC/CVC Intertie (analyzed in EA-07-70). The expansion project was funded by both state and federal agencies, with KCWA overseeing the normal operations of the facility. In addition, KCWA requires that the quality of water being introduced into the CVC either meets or exceeds those of Title 22 and/or the quality of the water currently in the CVC as to not impact those stakeholders who receive their water supply from the CVC. At any given time, the CVC can have water from SWP and CVP water from the California Aqueduct, groundwater pump-ins, the Kern River, the FKC, and other sources. While the quality of CVC water is generally higher in Total Dissolved Solids (TDS) than that of FKC water, it is still considered to be acceptable for both agricultural and municipal and industrial uses.

Friant-Kern Canal The FKC carries water over 151.8 miles in a southerly direction from Friant Dam to its terminus at the Kern River, four miles west of Bakersfield. The FKC has an initial capacity of 5,000 cfs that gradually decreases to 2,000 cfs at its terminus in the Kern River (Reclamation, 2009). The water conveyed in the FKC is from the San Joaquin River and is considered to be of good quality because it originates from snow melt from the Sierra Nevada. The water is used for municipal and industrial, and agricultural purposes in Fresno, Tulare, and Kern Counties. The FKC is a part of the CVP, which annually delivers about seven million AF of water for agricultural, urban, and wildlife use. Salinity measured as TDS typically average about 50 mg/L. Farmers in the Friant Division need to apply gypsum or some other chemical to raise the Salt Absorption Ratio (SAR) to allow the water to percolate through the charged soil particles (Reclamation, 2007). Adding CVC water to the FKC would also increase the salinity of the FKC water and raise its SAR. Non-CVP water proposed to be introduced into the FKC is required to meet the water quality standards of Title 22 and/or Reclamation's water quality policy.

Kern River The Kern River is about 165 miles long and is the southernmost river in the San Joaquin Valley. The river originates from the Sierra Nevada mountains on the eastern side of Tulare County and terminates on the west side of Kern County where it is mainly diverted for local water supplies. When the Kern River enters Kern County, it deposits into Lake Isabella created as a result of Isabella Dam. Below the dam, the river is highly diverted through a series of canals to irrigate farms in the southern San Joaquin Valley and provide municipal water supplies to the City of Bakersfield and surrounding areas. The Kern River is one of the few rivers in the Central Valley which does not contribute water to the CVP; however, the FKC joins the river approximately four miles west of downtown Bakersfield. Kern River water quality is generally similar to that in the FKC since its origin is also from snow melt in the Sierra Nevada.

3.1.2 Environmental Consequences

3.1.2.1 No Action

Under the No Action Alternative, Reclamation would not approve the banking program between DEID and RRBWD, and surface water supplies would be the same as existing conditions described above in the affected environment. There would be no impacts to surface water resources, water quality, conveyance facilities, or the Kern River as conditions would remain the same as existing conditions.

There may be minor impacts to the Tule Groundwater Subbasin level as compared to the baseline since landowners in DEID would likely continue to rely on groundwater as in the past; the amount pumped would vary with the fluctuating availability of surface water supplies. DEID could engage in exchanges and banking programs with other agencies in order to regulate the timing of their water supplies; however, the scope of this EA does not cover those actions and may be subject to additional environmental analysis. Without the Proposed Action, the Kern County Groundwater Subbasin underlying RRBWSD would not benefit from the potential recharge of good quality water left behind as a result of the banking program.

3.1.2.2 Proposed Action

The ancillary districts involved with the return of DEID's water via direct or indirect exchanges merely represent an avenue for which to possibly complete the banking program. Those districts would not experience any loss or gain in water supply that would impact their respective water resources. The Proposed Action would not interfere with the normal operations of any district involved with the banking program, nor would it impede any SWP or CVP obligations to deliver water to other contractors or to local fish and wildlife habitat. The KCWA and FWA manage the CVC and FKC, respectively, in such a manner that the normal operations of the canals would not be hindered by the Proposed Action. The delivery and extraction of the waters involved with the Proposed Action would occur during times when Reclamation and/or the FWA determines that there is excess capacity, and the KCWA similarly determining that the CVC would be able to accommodate the extra water. The capacity of the conveyance facilities would not change, and therefore water service or delivery obligations for both canals would continue as they have in the past. Most likely, the delivery of water to be banked would occur during the months after the peak irrigation demand has subsided. Similarly, the Rivermaster would have to determine that there is excess capacity before any waters involved with the Proposed Action is introduced into the Kern River. The implementation of the banking program between DEID and RRBWSD would not have adverse impacts on conveyance facilities and surface water resources.

With the ability to reregulate its water supplies by controlling the timing of delivery, the Proposed Action would provide DEID with surface water reliability and likely decrease reliance on groundwater pumping by its landowners during drought years. The Proposed Action would result in a small net increase in groundwater levels since more water would be delivered to the groundwater subbasin underlying RRBWSD than would have occurred absent the project. A six to ten percent loss to the underlying subbasin would be applied for a 1:1 exchange, and 1 af of DEID's banked water would remain in the bank for recharge purposes for every 2 af of water that is banked in RRBWSD. There would not be any depletion of groundwater supplies nor interference with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. The banking program could result in a net increase in the Tule and Kern County Groundwater Subbasin levels underlying DEID and RRBWSD. In addition, application of CVP water from the FKC for recharge in RRBWSD could result in a beneficial impact to groundwater quality since the quality of FKC water is better than that of the underlying aquifer; therefore, the Proposed Action could have beneficial impacts on groundwater resources.

Reclamation would ensure that the quality of water meets water quality requirements for agricultural, municipal, and industrial uses before it is introduced into the FKC. The groundwater quality near RRBWSD's recharge facilities is good. Water Quality Table Q-1 from RRBWSD's Addendum No. 1 to the 2001 Master Final Environmental Impact Report shows the deep and shallow groundwater quality test results and indicate that the quality is acceptable for agricultural uses. If through monitoring the water pumped from one or more of RRBWSD's extraction wells fail to meet the criteria for discharging groundwater into the CVC then the water from that well would not be allowed to be introduced into the CVC until subsequent testing and/or treatment have demonstrated that the water quality has been deemed acceptable by the KCWA so as not to impact other stakeholders receiving water from the CVC. Title 22 water quality standards would also need to be met before any waters involved with the Proposed Action is diverted into the Kern River.

Since AEWSD's turnout off the FKC is less than 100 feet from the FKC/CVC Intertie, this alternative for returning DEID's banked water could have a minor impact to AEWSD's water quality. As a result, Reclamation would require that an additional approved water quality monitoring program is conducted near AEWSD's turnout. A baseline sample would be taken before CVC water is introduced into the FKC and then subsequent testing would be performed during the period in which return water from the CVC is introduced into the FKC. If the quality of water at this location fails to meet agriculture, municipal, and industrial water quality standards then the Proposed Action would cease until water quality is improved. Table 1 below compares the water quality data of that from the CVC and the FKC (taken from AEWSD's comments attached in Appendix C), and compares those figures with that of Title 22 standards and the Food and Agricultural Organization (FAO) of the United Nations guidelines (which AEWSD cites in their comment package for suitability of irrigation standards). Based on AEWSD's data, though the quality of water is different between the two canals, the concentration of the six constituents (bicarbonate, boron, chloride, pH, sodium, and TDS) of concern in the CVC is still acceptable for irrigation.

The use of pump-back facilities to either directly deliver the return water to DEID and/or engage in operational exchanges with other districts having access to the FKC would preclude any

adverse water quality impacts to AEWSD. In addition, the return of DEID's banked water not involving the use of the FKC/CVC Intertie would not impact AEWSD's water quality. Therefore, there would be no adverse impacts to overall water quality as a result of the Proposed Action.

Table 1.

Water Quality in the Cross-Valley and Friant-Kern Canals compared to California Domestic Water Quality Standards and FAO Guidelines for Irrigation

Constituent	Units	Friant-Kern Canal (1)	Cross Valley Canal (2)	Title 22 MCL (3)	Ayers & Westcot (4)
Bicarbonate	mg/L	14 - 31 median = 22	55 - 110 median = 74		92 - 519
Boron	mg/L	0.02 - 0.11 median = 0.05	0.05 - 0.20 median = 0.15		0.5 - 2.0
Chloride	mg/L	0.5 - 5.0 median = 1.9	28 - 100 median = 46		142 - 355 (Surface Irrigation) < 107 (Sprinkler)
pH	units	7.2 - 8.3 median = 7.5	8.1 - 9.2 median = 8.5		6.5 - 8.4
Sodium	me/L	0.06 - 0.28 median = 0.14	1.03 - 2.97 median = 1.79		3 - 9
	mg/L	1.5 - 6.6 median = 3.3	24 - 69 median = 42	Recommended = 250, Upper = 500, Short-term = 600	69
Total dissolved solids	mg/L	13 - 37 median = 23	140 - 300 median = 210	Recommended = 500, Upper = 1000 Short-term = 1500	450 - 2000

(1) AEWSD data, October 2003 - June 2009, 27 samples
(2) AEWSD data, December 2003 - August 2007, 16 samples
(3) Title 22. The Domestic Water Quality and Monitoring Regulations specified by the State of California Health and Safety Code (Sections 4010-4037), and Administrative Code (Sections 64401 et seq.), as amended. Table 64449-B
(4) Ayers, R. S. and D. W. Westcot, *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations - Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985). Table 1

3.2 Land Use

3.2.1 Affected Environment

The ancillary districts involved with the delivery and/or return of DEID's water via direct or indirect exchange merely represents an avenue for which to possibly complete the banking program. Those districts would not experience any loss or gain in water supply that would impact their respective land uses. In addition, no modifications to existing facilities or new construction would be required as a result of the Proposed Action; therefore no impacts to land use would occur in AEWSD, KTWD, SWID and SSJMUD, and further detailed environmental analysis is not included in this section.

DEID and RRBWSD are approximately 40-50 miles east of the Coast Range and approximately 12 miles west of the Sierra Nevada Mountain Range. The lands comprising the action area are predominantly agricultural with the majority being prime agricultural lands. Agriculture in the area includes permanent and row crops, dairies, and fruit orchards, most of which rely heavily on a combination of groundwater and surface water resources to support irrigation demands.

Delano-Earlimart Irrigation District

DEID serves only agricultural water to over 400 landowners, with an average farm size of 135 acres. Virtually all of the acreage in DEID has been developed. DEID is composed of approximately 56,474 acres, of which 46,581 are irrigated. Approximately 83 percent of DEID is planted to permanent crops, the most prevalent crop being grapes. Other permanent crops include pistachios, almonds, and various tree fruit.

Rosedale-Rio Bravo Water Storage District

RRBWSD is located west of Bakersfield and is roughly 43,000 acres in size, serving 33,400 acres of irrigated croplands. Approximately 85 percent of RRBWSD's service area is farmed to alfalfa hay, almonds, grain, cotton, and corn. RRBWSD also has about 6,000 acres developed for urban uses.

3.2.2 Environmental Consequences

3.2.2.1 No Action

No changes to land use would occur in DEID and RRBWSD under the No Action Alternative and conditions would likely remain the same as existing conditions as described above in the affected environment. Impacts to crops in DEID could occur without supplemental water during dry hydrological years, but the overall land use would be within historical conditions. DEID and RRBWSD could construct new facilities in order to proceed with their banking program in order to bypass use of CVP water and/or federal facilities; however, construction would likely not be feasible and the construction of new facilities is outside the scope of this EA.

3.2.2.2 Proposed Action

DEID's water to be banked would be reregulated through RRBWSD's existing banking facilities and would not require the modification or construction of new conveyance facilities. The project would not induce the construction of any new homes or businesses, or road extensions or other new infrastructure. The Proposed Action would maintain agricultural lands by providing reliable water during dry years to DEID. The Proposed Action would not result in increased or decreased water supplies in DEID or RRBWSD that would induce growth or land use changes as both districts are fully built out and supply no water to customers other than agricultural users. There would be no adverse impacts from the Proposed Action as land use would remain the same as described in the affected environment.

3.3 Biological Resources

3.3.1 Affected Environment

By the mid-1940s, most of the valley's native habitat had been altered by man, and as a result, was severely degraded or destroyed. Approximately 86 percent of the estimated four million acres of native wetlands in the Central Valley was converted to urban and agricultural uses between 1850 and 1985 (USFWS, 1989). When the CVP began operations, over 30 percent of all natural habitats in the Central Valley and surrounding foothills had been converted to urban and agricultural land use (Reclamation, 1999). Prior to widespread agriculture, land within the Proposed Action area provided habitat for a variety of plants and animals. With the advent of irrigated agriculture and urban development over the last 100 years, many species have become threatened and endangered because of habitat loss. Of the approximately 5.6 million acres of

valley grasslands and San Joaquin saltbrush scrub, the primary natural habitats across the valley, less than 10 percent remains today. Much of the remaining habitat consists of isolated fragments supporting small, highly vulnerable populations (Reclamation, 2001). The project area is dominated by agricultural habitat that includes field crops, orchards, and pasture. The vegetation is primarily crops and frequently includes weedy non-native annual and biennial plants.

The following list (see Table 2) was obtained on August 20, 2009 (Document # 090820034632), by accessing the U.S. Fish and Wildlife Service (USFWS) Database: http://www.fws.gov/sacramento/es/spp_list.htm. The list is for the following U.S. Geological Survey quadrangles, which overlap DEID, SWID, AEWSD, KTWD, SSJMUD, and RRBWSD: Bear Mountain, Arvin, Weed Patch, Mettler, Tejon Hills, Coal Oil Canyon, Bena, Lamont, Edison, Oildale, Rosedale, Stevens, Gosford, Rio Bravo, Buttonwillow, East Elk Hills, Tupman, Deepwell Ranch, Mcfarland, Famoso, North Of Oildale, Pond, Wasco Nw, Wasco Sw, Wasco, Ducor, Sausalito School, Delano East, Richgrove, Pixley, and Delano West.

Table. 2. Special status species that could potentially occur within affected area.

Species	***Status[1]***	***Effects[2]***	***Occurrence in the Study Area[3]***
Amphibians			
California red-legged frog (*Rana aurora draytonii*)	T	NE	**Absent**. No individuals or habitat in area of effect.
Birds			
western burrowing owl (*Athene cunicularia hypugaea*)	MBTA	NE	**Present**. CNDDB[4] records indicate species occurs in the project area. No new construction or modification of existing facilities.
California condor (*Gymnogyps californianus*)	E, X	NE	**Possible**. Will forage up to 200km from roost/nest. There are records for this species less than 10 miles from project area. No construction of new facilities; no conversion of lands from existing uses.
Least Bell's vireo (*Vireo bellii pusillus*)	E	NE	**Absent**. No individuals or habitat in area of effect.
southwestern willow flycatcher (*Empidonax traillii extimus*)	E, X	NE	**Absent**. No individuals and does not occur on cultivated fields.
western snowy plover (*Charadrius alexandrinus nivosus*)	T	NE	**Absent**. No individuals or habitat in area of effect.
Fish			
delta smelt (*Hypomesus transpacificus*)	T	NE	**Absent**. No natural waterways within the species' range will be affected by the proposed action.
Invertebrates			
Conservancy fairy shrimp (*Branchinecta conservatio*)	E	NE	**Absent**. No individuals or habitat in area of effect.
valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	T	NE	**Present**. CNDDB records indicate species occurs along Kern river within NKWSD. No conversion of lands from existing uses or removal of elderberry bushes.
vernal pool fairy shrimp (*Branchinecta lynchi*)	T, X	NE	**Absent**. No individuals or habitat in area of effect.
Mammals			

Buena Vista Lake shrew (*Sorex ornatus relictus*)	E, X	NE	**Present**. CNDDB records indicate species along Kern river within NKWSD. No construction of new facilities; no conversion of lands from existing uses.
Tipton kangaroo rat (*Dipodomys nitratoides exilis*)	E	NE	**Present**. CNDDB records indicate species occurs in project area. No new construction or modification of existing facilities.
giant kangaroo rat (*Dipodomys ingens*)	E	NE	**Absent**. No individuals or habitat in area of effect.
San Joaquin kit fox (*Vulpes mactotis mutica*)	E	NE	**Present**. CNDDB records indicate this species occurs in the project area. No construction of new facilities; no conversion of lands from existing uses.
Plant			
Bakersfield cactus (*Opuntia treleasei*)	E	NE	**Present**. CNDDB records indicate species along Kern river within NKWSD and northern portion of AEWSD. No construction of new facilities; no conversion of lands from existing uses.
San Joaquin adobe sunburst (*Pseudobahia peirsonii*)	T	NE	**Absent**. CNDDB records indicate this species is extirpated from the project area.
Kern mallow (*Eremalche kernensis*)	E	NE	**Absent**. No individuals or habitat in area of effect.
San Joaquin woolly-threads (*Monolopia congdonii*)	E	NE	**Present**. Records do occur at the Project Area. No construction of new facilities; no conversion of lands from existing uses.
Reptiles			
blunt-nosed leopard lizard (*Gambelia sila*)	E	NE	**Present**. Documented as extant in project area, but no conversion of native lands or lands fallowed and untilled for three years or more, no new facilities.
giant garter snake (*Thamnophis gigas*)	T	NE	**Absent**. Presumed extirpated from southern San Joaquin valley (Hansen and Brode 1980).

1 Status= Listing of Federally special status species, unless otherwise indicated
E: Listed as Endangered
MBTA: Those species protected by the Migratory Bird Treaty Act
T: Listed as Threatened
X: Critical Habitat designated for this species
2 Effects = NE = No Effect determination.
3 Definition Of Occurrence Indicators
Present: Species observed in area
Possible: Species no observed at least in the last 10 years
Absent: Species not observed in study area and habitat requirements not met
4 CNDDB = California Natural Diversity Database 2009

3.3.2 Potentially Affected Listed Species

Western burrowing owls are a year-long residence species protected under the MBTA. Their habitat consists of open dry annual and perennial grasslands, agricultural and range lands, deserts, and scrubland containing low growing shrubs. They are active day and night and eat insects and small mammals (Klute et al., 2003). For shelter, owl will use burrows made by fossorial mammals. Breeding season is from February 1st through August 31st (Klute et al. 2003).

The California condor is one of the largest and rarest birds in the world (USFWS, 1996). By the early 1980s, their range largely became restricted to the foothill and mountain rangeland and forest habitat of the southern rim of the San Joaquin Valley; including San Luis Obispo, northern Los Angeles County, to Tulare County in western Sierra Nevada (USFWS, 1996). These opportunistic scavengers feed socially and roost communally. California condor will nest in the cavity of rocks or tree trunks often near foraging grounds located in foothills and grasslands (USFWS, 1996). Mated pairs will forage near roost and breeding sites (20 miles away) while immature and unpaired adults have been found foraging over 124 miles (Meretsky and Snyder, 1992).

The valley elderberry longhorn beetle is endemic to the California Central Valley. They occur in riparian environments that border upland habitats containing their host plant, elderberry (*Sambucus* spp.*)*. It has been estimated that less than one percent of their native habitat remains (Collinge et al., 2001). Adults will feed on foliage of the elderberry bush between March through early June. Following mating, the female beetle will lay eggs in the cracks of living elderberry bush. After larvae emerge, they will burrow inside the pith of the plant and continue to develop for 1 to 2 years. Prior to pupation, the larvae will burrow an exit hole in the stem of the bush then pack the hole with frass. Following metamorphosis, the adult will emerge from the pupal chamber between middle of March through June (Barr, 2001).

The Buena Vista Lake shrew is an insectivore endemic to Kern County, California. They occur in riparian or wetland communities containing dense leaf litter or low growing herbaceous cover that retain sufficient moisture, provide cover and prey (USFWS, 2002). They are active day or night foraging for food but often will go unnoticed due to their cryptic behavior. Breeding activity begins by February or March and terminates with the onset of the dry season (USFWS, 2002).

Tipton kangaroo rats are predominately a seed eater but will supplement their diet with herbaceous shrubs and insects. They construct their dens in open level habitat along the base of shrubs, fences, and canal embankments (USFWS, 1988). The mating season begins in the winter and lasts until early April. Kangaroo rats are highly susceptible to flooding which can spoil their seed cache or even cause drowning (USFWS, 1988).

San Joaquin kit foxes inhabit grasslands and scrublands, many of which have been extensively modified. Types of modified habitats include those with oil exploration and extraction equipment, wind turbines, and agricultural mosaics of row crops, irrigated pastures, orchards, vineyards, and grazed annual grasslands (USFWS, 1998; Warrick et al., 2007), which are a common habitat in the project area. Diet consists of small mammals, insects, birds, and vegetation (USFWS, 1998). At one year of age, kit foxes can become sexually active. Breeding occurs between December and March. Young will venture out on their own around August to September (USFWS, 1998).

Bakersfield cactus is a low growing perennial that flowers in May and is found in sandy to sandy-loam soils of Kern County in highly fragmented populations (USFWS, 1990). They occur on flood plains, along bluffs and rolling hills in alkali saltbrush scrub plant communities. Much of the life history of this cactus is still not known (USFWS, 1988).

San Joaquin woolly-threads are an annual herb. During periods of low precipitation, woolly-threads will produce few seeds that tend to germinate from November till January (USFWS, 1988). The plants will flower from February till May then all signs of this plant tend to disappear. The methods of seed dispersal are currently unknown (USFWS, 1988).

Blunt-nosed leopard lizards live in the San Joaquin Valley region in expansive, arid areas with scattered vegetation. They inhabit non-native grassland and alkali sink scrub communities of the Valley floor marked by poorly drained, alkaline, and saline soils (Montanucci 1965). These lizards will use small mammal burrows for permanent shelter and dormancy or can construct shallow tunnels under exposed rocks or earth berms for temporary shelter (Warrick et al., 1998). They will eat insects, other lizards, and some plant material. The breeding season occurs at the end of April till early June (USFWS, 1998).

3.3.3 Environmental Consequences

3.3.3.1 No Action

Under the No Action Alternative there would be no impacts to wildlife and special status species, as no new facilities would be constructed and existing deliveries would continue as has historically occurred. The conditions of special status wildlife species and habitats under the No Action Alternative would be the same as they would be under existing conditions described in the Affected Environment; therefore, no additional effects to special status species or critical habitats are associated with this alternative.

3.3.3.2 Proposed Action

Under the Proposed Action alternative, Reclamation would approve DEID's excess water supplies for conveyance in existing facilities to RRBWSD for banking. Water demands and conditions in the project area would not change and no new facilities would be constructed, and therefore, there would be no direct effects on listed species or designated critical habitat. The proposed water conveyance would not involve the conversion of any land and would therefore not change the land use patterns of the cultivated or fallowed fields that do have some value to listed species or birds protected by the MBTA. Since no natural stream courses alteration would occur, there would be no effects on listed fish species.

3.4 Cultural Resources

Cultural resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation that outlines the Federal Government's responsibility to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (NRHP). Those resources that are on or eligible for inclusion in the NRHP are referred to as historic properties.

The Section 106 process is outlined in the Federal regulations at 36 Code of Federal Regulations (CFR) Part 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking will have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action to

affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that APE, determine the effect that the undertaking will have on historic properties, and consult with the State Historic Preservation Office (SHPO), to seek concurrence on Reclamation's findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties.

3.4.1 Affected Environment

The San Joaquin Valley is rich in historical and prehistoric cultural resources. Cultural resources in this area are generally prehistoric in nature and include remnants of native human populations that existed before European settlement. Prior to the 18th Century, many Native American tribes inhabited the Central Valley. It is possible that many cultural resources lie undiscovered across the valley. The San Joaquin Valley supported extensive populations of Native Americans, principally the Northern Valley Yokuts, in the prehistoric period. Cultural studies in the San Joaquin Valley have been limited. The conversion of land and intensive farming practices over the last century may have destroyed many Native American cultural sites.

3.4.2 Environmental Consequences

3.4.2.1 No Action

Under the No Action Alternative, there would be no impacts to cultural resources since there would be no modifications to existing conveyance systems and no new construction that would result in any ground disturbance. Conditions related to cultural resources would remain the same as exiting conditions.

3.4.2.2 Proposed Action

Similar to the No Action Alternative, there would be no new ground disturbance and the banking program would be accomplished using existing facilities. No new lands would be put into agricultural production as a result of the banking program. The Proposed Action involves the type of activity that has no potential to affect historic properties.

3.5 Indian Trust Assets

ITA are legal interests in assets that are held in trust by the U.S. Government for federally recognized Indian tribes or individuals. The trust relationship usually stems from a treaty, executive order, or act of Congress. The Secretary of the Interior is the trustee for the United States on behalf of federally recognized Indian tribes. "Assets" are anything owned that holds monetary value. "Legal interests" means there is a property interest for which there is a legal remedy, such a compensation or injunction, if there is improper interference. ITA cannot be sold, leased or otherwise alienated without the United States' approval. Assets can be real property, physical assets, or intangible property rights, such as a lease, or right to use something; which may include lands, minerals and natural resources in addition to hunting, fishing, and water rights. Indian reservations, rancherias, and public domain allotments are examples of lands that are often considered trust assets. In some cases, ITA may be located off trust land.

Reclamation shares the Indian trust responsibility with all other agencies of the Executive Branch to protect and maintain ITA reserved by or granted to Indian tribes, or Indian individuals by treaty, statute, or Executive Order.

3.5.1 Affected Environment

The nearest ITA is the Tule River Reservation approximately 23 miles northeast of the project location.

3.5.2 Environmental Consequences

3.5.2.1 No Action

Under the No Action Alternative, Reclamation would not approve of the banking program between DEID and RRBWSD. Conditions would remain the same as existing conditions; therefore, there would be no impacts to ITA.

3.5.2.2 Proposed Action

Approval of the banking program between DEID and RRBWSD would not involve any construction and would utilize existing conveyance facilities; therefore, activities associated with the Proposed Action would not affect ITA.

3.6 Socioeconomic Resources

3.6.1 Affected Environment

The socioeconomic setting is dependent upon population, employment, housing, and revenues earned by the primary private employers. Kern County's economy is based on diverse assets of agriculture, oil, aerospace, transportation, and warehousing services. The area located within DEID and RRBWSD is primarily rural agricultural land which provides farm-related jobs. There are small businesses that support agriculture, for example: feed and fertilizer sales, machinery sales and service, pesticide applicators, transport, packaging, marketing, etc. within the surrounding area.

3.6.2 Environmental Consequences

3.6.2.1 No Action

The No Action Alternative would have no impact on socioeconomic resources. Respectively, RRBWSD and DEID could continue to engage in water banking opportunities and/or exchanges that do not involve Federal facilities and/or CVP water. The socioeconomic conditions in both districts would be within historical settings.

3.6.2.2 Proposed Action

The Proposed Action would provide water supply reliability to DEID that would help to sustain existing croplands. Businesses and farm workers rely on these crops to maintain jobs. Conditions would remain the same as existing conditions and there would be no impacts to socioeconomic resources. The Proposed Action would continue to support the economic vitality in the region; therefore, there would be no adverse impacts to socioeconomic resources.

3.7 Environmental Justice

3.7.1 Affected Environment

The February 11, 1994, Executive Order 12898 requires federal agencies to ensure that their actions do not disproportionately impact minority and disadvantaged populations. The market for seasonal workers on local farms draws thousands of migrant workers, commonly of Hispanic origin from Mexico and Central America, into the San Joaquin Valley. Agriculture and related businesses are the main industry in DEID and RRBWSD, which provides employment opportunities for these minority and/or disadvantaged populations. The areas around the districts have stable economies based on local tomato, cereal, citrus, olive, and walnut products.

3.7.2 Environmental Consequences

3.7.2.1 No Action

The No Action Alternative would result in conditions remaining the same as existing conditions in both DEID and RRBWSD. The No Action Alternative would not result in any adverse effects unique to minority or low-income populations in the affected area.

3.7.2.2 Proposed Action

Under the Proposed Action, the ability to manage its varied water resources would help maintain agricultural production and local employment in DEID. The Proposed Action would not affect low-income or disadvantaged populations within the districts by not causing dislocation, changes in employment, or increase flood, drought, or disease. There would be no changes to existing conditions. Employment opportunities for low-income wage earners and minority population groups would be within historical conditions. Disadvantaged populations would not be subject to disproportionate impacts.

The Proposed Action does not propose any features that would result in adverse human health or environmental effects, have any physical effects on minority or low-income populations, and/or alter socioeconomic conditions of populations that reside or work in the vicinity of the Proposed Action.

3.8 Air Quality

Section 176 (c) of the Clean Air Act (CAA) (42 U.S.C. 7506 (c)) requires that any entity of the Federal government that engages in, supports, or in any way provided financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan (SIP) required under Section 110 (a) of the CAA (42 U.S.C. 7401 (a)) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with a SIP's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards and achieving expeditious attainment of those standards. Each federal agency must determine that any action that is proposed by the agency and that is subject to the regulations implementing the conformity requirements will, in fact conform to the applicable SIP before the action is taken.
On November 30, 1993, the Environmental Protection Agency promulgated final general conformity regulations at 40 CFR 93 Subpart B for all federal activities except those covered under transportation conformity. The general conformity regulations apply to a proposed federal

action in a non-attainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutant caused by the Proposed Action equal or exceed certain *de minimis* amounts thus requiring the federal agency to make a determination of general conformity.

3.8.1 Affected Environment

The project area is located within the San Joaquin Valley Air Basin (SJVAB) which is the second largest air basin in California. Despite years of improvements, the SJVAB does not meet State and Federal health-based air quality standards. The governing body over the SJVAB, the San Joaquin Valley Air Pollution Control District (SJVAPCD), has adopted stringent control measures to reduce emissions and improve overall air quality within the SJVAB. The following *de minimis* amounts for the region covering the project area within the SJVAB are presented in Table 3 below:

Table 3. San Joaquin Valley Air Basin General Conformity *de minimis* Thresholds

Pollutant	Federal Status	*de minimis* (Tons/year)	*de minimis* (Pounds/day)
VOC/ROG (as an ozone precursor)	Nonattainment serious 8-hour ozone	50	274
NO_x (as an ozone precursor)	Attainment Maintenance for NO_2	50	274
PM_{10}	Attainment Maintenance	100	548
CO	Attainment Unclassified	100	548

Sources SJVAPCD 2009; 40 CFR 93.153

3.8.2 Environmental Consequences

3.8.2.1 No Action

Under the No Action Alternative, DEID would continue to engage in banking opportunities and exchanges to maximize management of their water supply within the facilities available to them either in district or utilizing other district's facilities as approved by Reclamation and DWR. DEID would continue to engage in transfers and exchanges with other agencies to help reduce the impacts of critical dry year shortages. Conditions would be the same as the existing conditions; therefore, no additional impacts are associated with this alternative.

3.8.2.2 Proposed Action

Under the Proposed Action, movement of water between DEID, RRBWSD, and other potential exchange partners would be done via gravity flow and/or pumped using electric motors which have no emissions. In addition, extraction of banked groundwater from RRBWSD's three extraction wells would be pumped using electric motors which do not emit emissions that would contribute to air quality impacts. The air quality emissions from electrical power have been considered in environmental documentation for the generating power plant. There are no emissions from electrical motors and therefore a conformity analysis is not required under the CAA and there would be no impact on air quality. The Proposed Action would not involve any construction or land disturbing activities that could lead to fugitive dust emissions and/or exhaust emissions associated with the operations of heavy machinery.

In the event that reverse pumping in the FKC is required to return banked water to DEID, a portable diesel pump at each of the three check structures would be required to perform such actions. If all three diesel pumps were utilized to reverse pump all 10,000 af/y of the return water back to DEID, its total emissions would still be well below the *de minimis* thresholds for the SJVAB; therefore, there would be no adverse air quality impacts associated with this project.

3.9 Cumulative Impacts

Existing or foreseeable projects that could affect or could be affected by the Proposed Action:

- *FONSI/EA-05-01 Kern-Tulare Water District and Rag Gulch Water District Groundwater Banking Project in Rosedale-Rio Bravo Water Storage District*. KTWD entered into a 25-year banking and exchange program with RRBWSD. Under this project, up to 40,000 af/y of KTWD's water will be banked in RRBWSD and up to 9,000 af/y will be returned to KTWD for use at a later date upon request. The exchange for this project is on a 2 to 0.96 ratio.

- DEID is currently involved in a banking program, which consists of banking up to 30,000 af/y of its CVP water in North Kern Water Storage District for future return of up to 15,000 af/y upon request. The project will take place until February 2026 and was analyzed in, *FONSI/SEA-09-74 Amendment to the Storage and Exchange of Central Valley Project Water Delano-Earlimart Irrigation District to North Kern Water Storage District*.

- *FONSI/EA-09-169 Two-Year Exchange Agreements and/or Warren Act Contracts for Conveyance of non-Central Valley Project (Groundwater) in the Delta-Mendota Canal – Water Year 2010 through Water Year 2011*. Under this project, participating CVP contractors within the Delta Division and San Luis Unit could pump up to 50,000 af total of non-CVP water into the Delta-Mendota Canal (DMC) during the 2010 Water Year.

- As part of the San Joaquin River Restoration Settlement (Settlement), the Water Management Goal aimed to reduce or avoid adverse water supply impacts to all of the Friant Division long-term contractors that may result from the Interim and Restoration Flows provided for in the Settlement. As a result, Reclamation is currently developing plans for recirculation, recapture, reuse, and exchange or transfer of Interim and Restoration Flows. Specifics for these plans are currently unknown; however, one proposal involves recapturing the flows from the Delta and recirculation through the California Aqueduct. The flows would then be introduced into the FKC via the CVC for ultimate delivery to Friant Division CVP contractors. Installation of permanent pump-back facilities at key check structures would allow reverse-flow in the FKC for direct delivery to the contractors upstream of the CVC introductory point.

The Proposed Action and other similar projects would not interfere with the projects listed above, nor would it hinder the normal operations of the CVP and Reclamation's obligation to deliver water to its contractors or to local fish and wildlife habitat. The FWA manages the FKC, on Reclamation's behalf, such that capacity must exist before any movement of water is

scheduled under the Proposed Action. Similarly, the KCWA must determine that there is excess capacity before water involved with the Proposed Action is allowed to enter the CVC so as not to impact any stakeholders that normally receive their water supply from the CVC. Most likely, the delivery of water to be banked would occur during the months after the peak irrigation demand has subsided and excess capacity within the conveyance facilities do exist. The Rivermaster would also have to determine that the Kern River is able to accommodate any water under the Proposed Action; therefore, when taking into consideration other similar existing and/or future actions, the implementation of the banking program between DEID and RRBWSD would not have adverse cumulative impacts on the normal operations of the conveyance facilities involved.

Table 1 was created from data of water quality testing performed within AEWSD's Intake Canal near its turnout off of the FKC and CVC (Appendix C). Since AEWSD is the last CVP contractor on the FKC system, the CVP water (or "Project Water" per their long-term contract with Reclamation) they receive from their FKC turnout could potentially contain sources of non-CVP water, so the data from Table 1 could then be used as a good indicator of FKC water quality at that point of the FKC as a result of cumulative projects. Likewise, Table 1 also contains data for CVC water quality entering AEWSD's Intake Canal at that point off the CVC. At any given time, CVC water could contain a variety of sources including SWP and CVP water from the California Aqueduct, recirculation flows, groundwater pump-in projects, FKC water, and other sources from local streams, rivers, etc. When taking into consideration other similar existing and future projects involving water conveyance in the CVC, the water quality data for the CVC in Table 1 could then be used as a good indicator of CVC water quality received by AEWSD from cumulative projects. As discussed in Section 3.1.2.2, the return of DEID's banked water through the conveyance of water from the CVC to the FKC via the FKC/CVC Intertie would not result in adverse water quality impacts to AEWSD. The CVC water quality alone is considered to be acceptable for both agricultural and municipal and industrial purposes. The Proposed Action involving the use of the FKC/CVC Intertie to return DEID's banked water would result in the commingling of water from the CVC with better quality FKC water. According to Table 4, AEWSD has received on average 93,652 af/y of CVP water from the FKC and 38,771 af/y of CVP water from the CVC (via exchanges) over the last seven years, which equates to approximately 70% water from the FKC and 30% water from the CVC. Under the Proposed Action, up to 10,000 af/y of DEID's banked water could be returned using the FKC/CVC Intertie point of introduction, resulting in a ratio of less than 3:2 (60% or 83,652 af FKC water and 40% or 48,771 af CVC water) average CVP water deliveries to AEWSD. According to Table 5, the predicted water quality under that ratio would still be suitable for agricultural purposes under the FAO guidelines and meet Title 22 standards. In the unlikely event that up to 60,000 af/y of CVC water is introduced into the FKC at this same point of introduction as the result of cumulative similar existing and future projects, AEWSD could potentially receive up to a 1:3 ratio of FKC water to CVC water (25% FKC water to 75% CVC water). Table 5 shows that this ratio would still not result in concentrations of the six constituents of concern to exceed Title 22 standards or the FAO guidelines for irrigation water. Again, it should be mentioned that 100% CVC water is still considered to be acceptable under the FAO guidelines for irrigation water and meets Title 22 standards (Tables 1 and 5). The use of pump-back facilities to convey water in the reverse direction from the terminus of the FKC for the Proposed Action and other similar existing and future projects would preclude any water quality impacts to AEWSD.

Table 4. Total Deliveries of CVP Water to AEWSD in Acre-Feet

year	Friant-Kern Canal	Cross Valley Canal	Percent FKC	Percent CVC
2003 Total	91,687	41,921	69%	31%
2004 Total	60,838	75,007	45%	55%
2005 Total	222,465	75,858	75%	25%
2006 Total	145,999	24,190	86%	14%
2007 Total	21,860	16,516	57%	43%
2008 Total	30,295	19,602	61%	39%
2009 Total	82,424	18,306	82%	18%

Data source: BORWORKS

Table 5. Predicted Concentrations of Six Constituents in Water Deliveries to AEWSD

Constituent	Units	100% CVC	10%	20%	30%	40%	50%	60%	70%	80%	90%	100% FKC	MCL
Bicarbonate	mg/L	74	69	64	58	53	48	43	38	32	27	22	92 - 519
Boron	mg/L	0.15	0.14	0.13	0.12	0.11	0.10	0.09	0.08	0.07	0.06	0.05	0.5 - 2.0
Chloride	mg/L	46	42	37	33	28	24	20	15	11	6	1.90	107 - 355
pH	units	8.5	8.4	8.3	8.2	8.1	8.0	7.9	7.8	7.7	7.6	7.5	6.5 - 8.4
Sodium	mg/L	1.79	1.63	1.46	1.30	1.13	0.97	0.80	0.64	0.47	0.31	0.14	69
Total dissolved solids	mg/L	210	191	173	154	135	117	98	79	60	42	23	450 - 2000

Other alternatives of returning DEID's banked water not involving the FKC/CVC Intertie, as mentioned in Section 2.2, would not contribute to cumulative adverse impacts to AEWSD's water quality. Overall, the Proposed Action would not result in adverse cumulative impacts to water quality.

Reclamation's action is the approval to bank DEID's Class 1 and Class 2 CVP supplies and 215 Water in RRBWSD via existing facilities. The use of this water upon return to DEID would be to maintain and grow crops on existing agricultural lands. Since there would be no cumulative adverse impacts to water quality, it is then anticipated that crops receiving this water would not be adversely impacted. No native or previously untilled lands would be put into production. The Proposed Action would maintain existing land uses and would not contribute to cumulative changes or impacts to land uses or planning. Land use trends around the action area in recent years have resulted in urbanization of agricultural lands. This trend is typically caused by economic pressures and is likely to continue with our without these water service actions. Therefore, there would be no cumulative effects to land use as a result of the Proposed Action.

The groundwater extraction wells involved with this project are located within RRBWSD's existing banking facilities and would not interfere with any private wells. RRBWSD has been banking groundwater for in-district use for over 40 years. Groundwater levels in the area would

also slightly increase since 1 af of water may be left behind for recharge purposes under a 2:1 banking ratio and in addition to a six to ten percent of DEID's balance would deducted for water loss to the basin as a result of storage under a 1:1 banking ratio. In addition, the groundwater level underlying DEID could experience a beneficial cumulative impact over the course of this project because landowners in DEID would need to rely less on groundwater pumping during dry years. Long-term application of better quality CVP water from the FKC over the course of the project, including other similar existing and/or foreseeable projects, for recharge would result in a beneficial cumulative impact to groundwater quality in the Kern County Groundwater Subbasin. The Proposed Action, when added to other similar existing and proposed actions, may result in beneficial cumulative impacts to overall groundwater resources in the project area on a small scale.

Although the Proposed Action itself has no adverse impacts on air quality, it may contribute to cumulative impacts on those resources when considering all pumping actions within the area. However, not all pumping can be done at the same time due to limitations of the pumps. Emissions calculated for the project are based on the worst possible engines and the longest runtime needed and are still below the *de minimis* thresholds. It is likely that the Proposed Action, when combined with other similar actions within the SJVAB, would still be well below the *de minimis* thresholds and would therefore have no cumulative adverse impacts.

As in the past, hydrological conditions and other factors are likely to result in fluctuating water supplies which drives requests for water service actions such as water banking. Water districts aim to provide water to their customers based on available water supplies and timing, all while attempting to minimize costs. Farmers irrigate and grow crops based on these conditions and factors, and a myriad of water service actions are approved and executed each year to facilitate water needs. Each water service transaction involving Reclamation undergoes environmental review prior to approval. Due to the general nature of water banking, the project would have no adverse impacts that are individually limited, but cumulatively considerable.

Section 4 Consultation and Coordination

4.1 Fish and Wildlife Coordination Act (16 USC § 661 et seq.)

The Fish and Wildlife Coordination Act (FWCA) requires that Reclamation consult with fish and wildlife agencies (federal and state) on all water development projects that could affect biological resources. The Proposed Action does not involve federal water development projects. Therefore the FWCA does not apply.

4.2 Endangered Species Act (16 USC § 1531 et seq.)

Section 7 of the Endangered Species Act requires Federal agencies, in consultation with the Secretary of the Interior and/or Commerce, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species. Reclamation has determined that the Proposed Action would not affect any Federally proposed or listed species or any proposed or designated critical habitat. Therefore, no consultation is required with either the USFWS or the National Marine Fisheries Service.

4.3 National Historic Preservation Act (16 USC § 470 et seq.)

The NHPA of 1966, as amended (16 USC 470 *et seq*), requires that federal agencies give the Advisory Council on Historic Preservation an opportunity to comment on the effects of an undertaking on historic properties, properties that are eligible for inclusion in the NRHP. The 36 CFR Part 800 regulations implement Section 106 of the NHPA. Section 106 of the NHPA requires federal agencies to consider the effects of federal undertakings on historic properties, properties determined eligible for inclusion in the NRHP. Compliance with Section 106 follows a series of steps that are designed to identify interested parties, determine the APE, conduct cultural resource inventories, determine if historic properties are present within the APE, and assess effects on any identified historic properties. The activities associated with the Proposed Action would include no new ground disturbance, no change in land use, and the use of existing conveyance features to move and store water. Reclamation has determined that there would be no potential to affect historic properties by the Proposed Action pursuant to 36 CFR 800.3(a)(1).

4.4 Migratory Bird Treaty Act (16 USC § 703 et seq.)

The MBTA implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the Act provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Subject to limitations in the Act, the Secretary of the Interior may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting of any migratory bird, part, nest or egg will be allowed, having regard for temperature zones, distribution, abundance,

economic value, breeding habits and migratory flight patterns. The Proposed Action would be in compliance with the MBTA.

4.5 Executive Order 11988 – Floodplain Management and Executive Order 11990-Protection of Wetlands

Executive Order 11988 requires Federal agencies to prepare floodplain assessments for actions located within or affecting flood plains, and similarly, Executive Order 11990 places similar requirements for actions in wetlands. The Proposed Action would not affect either concern.

4.6 Clean Air Act (42 USC § 176 et seq.)

Section 176 (c) of the CAA (42 USC 7506 (c)) requires that any entity of the Federal government that engages in, supports, or in any way provided financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan (SIP) required under Section 110 (a) of the CAA (42 USC 7401 (a)) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with a SIP's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards and achieving expeditious attainment of those standards. Each federal agency must determine that any action that is proposed by the agency and that is subject to the regulations implementing the conformity requirements will, in fact conform to the applicable SIP before the action is taken. As described in Section 3.8.2, the Proposed Action would not result in air quality impacts that would exceed State, Federal, and local thresholds.

4.7 Clean Water Act (16 USC § 703 et seq.)

Section 401

Section 401 of the Clean Water Act (CWA) (33 USC § 1311) prohibits the discharge of any pollutants into navigable waters, except as allowed by permit issued under sections 402 and 404 of the CWA (33 USC § 1342 and 1344). If new structures (e.g., treatment plants) are proposed, that would discharge effluent into navigable waters, relevant permits under the CWA would be required for the project applicant(s). Section 401 requires any applicant for an individual U.S. Army Corps of Engineers (Corps) dredge and fill discharge permit to first obtain certification from the state that the activity associated with dredging or filling will comply with applicable state effluent and water quality standards. This certification must be approved or waived prior to the issuance of a permit for dredging and filling. No pollutants would be discharged into any navigable waters under the Proposed Action so no permits under Section 401 are required.

Section 404

Section 404 of the CWA authorizes the Corps to issue permits to regulate the discharge of "dredged or fill materials into waters of the United States" (33 USC § 1344). No activities such as dredging or filling of wetlands or surface waters would be required for implementation of the Proposed Action, therefore permits obtained in compliance with CWA section 404 are not required.

Section 5 List of Preparers and Reviewers

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Appendix A – Reclamation Policy for Accepting Non-Project Water into the Friant-Kern and Madera Canals

RECLAMATION

Managing Water in the West

Policy for Accepting Non-Project Water into the Friant-Kern and Madera Canals

Water Quality Monitoring Requirements

Friant-Kern Canal in Tulare County (Credit: Ted Holzem, Mintier & Associates)

U.S. Department of the Interior
Bureau of Reclamation
Mid-Pacific Region

March 7, 2008

United States Bureau of Reclamation
South-Central California Area Office
and
Friant Water Authority

Policy for Accepting Non-Project Water into the Friant-Kern and Madera Canals Water Quality Monitoring Requirements

This Policy describes the approval process, implementation procedures, and responsibilities of a Contractor requesting permission from the U.S. Bureau of Reclamation (Reclamation) to introduce non-project water into the Friant-Kern and Madera Canals, features of the Friant Division of the Central Valley Project (CVP). The monitoring requirements contained herein are intended to ensure that water quality is protected and that domestic and agricultural water users are not adversely impacted by the introduction of non-project water. The discharge of non-project water shall not in any way limit the ability of either Reclamation or the Friant Water Authority (Authority) to operate and maintain the Canals for their intended purposes nor shall it adversely impact existing contracts or any other agreements. The discharge of non-project water into the Canals will be permissible only when there is excess capacity in the system as determined by the Authority and or Reclamation.

The Contractor shall be responsible for securing other requisite Federal, State or local permits.

Reclamation, in cooperation with the Authority, will consider all proposals to convey non-project water based upon this Policy's water quality criteria and implementation procedures established in this document. Table 1 provides a summary of the Policy's water quality monitoring requirements.

This policy is subject to review and modification by Reclamation and the Authority. Reclamation and the Authority reserve the right to change the water quality monitoring requirements for any non-project water to be conveyed in the Friant-Kern and Madera Canals.

A. Types of Non-Project Water

This policy recognizes three types of non-project water with distinct requirements for water quality monitoring.

1. "***Type A***" Non-Project Water

Water for which analytical testing demonstrates complete compliance with California drinking water standards (Title 22)[1], plus other constituents of concern recommended by the California Department of Health Services. Type A water must be tested every year for the full list of

1. Title 22. The Domestic Water Quality and Monitoring Regulations specified by the State of California Health and Safety Code (Sections 4010-4037), and Administrative Code (Sections 64401 et seq.), as amended.

constituents listed in Table 2. No in-prism (within the Canal) monitoring is required to convey Type A water.

2. "***Type B***" Non-Project Water

Water that generally complies with Title 22, but may exceed the Maximum Contaminant Level (MCL) for certain inorganic constituents of concern to be determined by Reclamation and the Authority on a case-by-case basis. This water may be discharged into the Canal over short-intervals. Type B water shall be tested every year for the full list of constituents in Table 2, and more frequently for the identified constituents of concern. Flood Water and Ground Water are Type B non-project water.

Type B water may not be pumped into the Friant-Kern Canal within a half-mile upstream of a delivery point to a CVP Municipal and Industrial contractor. At this time, there are no M & I Contractors served from the Madera Canal.

The introduction of Type B water into the Friant-Kern and Madera Canals will require regular in-prism monitoring to confirm that the CVP water delivered to downstream customers is suitable in quality for their needs. The location, frequency, and parameters of in-prism monitoring will be determined by Reclamation and the Authority on a case-by-case basis.

3. "***Type C***" Non-Project Water

Type C Water is non-project water that originates in the same source as CVP water but that has not been appropriated by the United States. For example, non-project water from a tributary within the upper San Joaquin River watershed, such as the Soquel Diversion from Willow Creek above Bass Lake, is Type C water. Another example is State Water Project water pumped from the California Aqueduct and Cross Valley Canal into the lower Friant-Kern Canal. No water quality analyses are required to convey Type C water through the Friant-Kern or Madera Canals because it is physically the same as Project water.

B. Authorization

The Warren Act (Act of February 21, 1911, ch. 141, 36 Stat. 925), as supplemented by Section 305 of Public Law 102-250, authorizes Reclamation to contract for the carriage and storage of non-project water when excess capacity is available in Federal water facilities. The terms of this Policy are also based on the requirements of the Clean Water Act (33 U.S.C. 1251 et seq.), the Endangered Species Act of 1973 (P.L. 93-205), the National Environmental Policy Act of 1969 (NEPA, 42 U.S.C. 4321 et seq.), the Reclamation Act of 1902 (June 17, 1902 as amended), and the Safe Drinking Water Act of 1974 (P.L. 93-523, amended 1986) and Title XXIV of the Reclamation Projects Authorization and Adjustments Act of 1992 (P.L. 102-575, 106 Stat 4600).

C. General Requirements for Discharge of Non-Project Water

1. Contract Requirements

A Contractor wishing to discharge non-project water into the Friant-Kern or Madera Canals must first execute a contract with Reclamation. The contract may be negotiated with Reclamation's South Central California Area Office (SCCAO) in Fresno.

2. Facility Licensing

Each non-project water discharge facility must be licensed by Reclamation and the Authority. The license for erection and maintenance of structures may be negotiated with the SCCAO.

3. Prohibition When the Canal is Empty

Non-project shall not be conveyed in the Friant-Kern or Madera Canals during periods when the canal is de-watered for maintenance.

D. Non-Project Discharge, Water Quality, and Monitoring Program Requirements

1. General Discharge Approval Requirements

Each source of non-project water must be correctly sampled, completely analyzed, and be approved by Reclamation prior to introduction into the Friant-Kern or Madera Canals. The Contractor shall pay the cost of collection and analyses of the non-project water required under this policy[2].

2. Water Quality Sampling and Analyses

Each source of Type A and B non-project water must be tested every year for the complete list of constituents of concern and bacterial organisms listed in Table 2. The analytical laboratory must be approved by Reclamation (Table 3).

3. Water Quality Reporting Requirements

Water quality analytical results must be reported to the Contracting Officer for review.

4. Type B Water Quality Monitoring

Reclamation will provide a Quality Assurance Project Plan (QAPP) that will describe the protocols and methods for sampling and analysis of Type B non-project water.

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2. Reclamation will pay for the collection and analyses of quarterly baseline samples collected at Friant Dam and Lake Woolomes.

The program may include sampling of canal water upstream and downstream of the Contractor's discharge point into the Friant-Kern or Madera Canal. The location of samples, and the duration and frequency of sampling, and the list of constituents to be analyzed, may be changed upon review of measured trends in concentration of those constituents of concern.

E. Control of Water Quality in the Friant Division

The quality of CVP water will be considered impaired if the conveyance of the Contractor's non-project water is causing the quality of CVP water to exceed a maximum contaminant level specified in Title 22 (Table 2).

Reclamation, in consultation with the Authority, will direct the Contractor to stop the discharge of non-project water from this source into the Friant-Kern or Madera Canal.

F. Baseline Water Quality Analysis

Every four months, Reclamation will collect samples of water from the Friant-Kern Canal near Friant Dam and near Lake Woolomes. These samples will be analyzed for Title 22 and many other constituents. The purpose of theses samples is to identify the baseline quality of water in the canal. No direct analysis within the Madera Canal will be conducted at this time.

The cost of this analysis will be borne by Reclamation under the CVP Baseline water quality monitoring program.

G. Water Quality Data Review and Management

All water quality data must be sent to Reclamation for review, verification, and approval. All water quality data will be entered into a database to be maintained by Reclamation. All field notes and laboratory water quality analytical reports will be kept by the Authority. All water quality data will be available upon request to the Contractor and other interested parties.

Definitions

CVP or Project water
Water that has been appropriated by the United States for the Friant Division of the CVP. The source of Project water in the Friant Division is the San Joaquin River watershed.

Non-project water
Water that has not been appropriated by the United States for the Friant Division of the CVP. This includes groundwater, and surface water from other streams and rivers that cross the Friant-Kern and Madera Canals, such as Wutchumna Ditch.

Maximum Contaminant Level
Usually reported in milligrams per liter (parts per million) or micrograms per liter (parts per billion).

Non-project discharge system
The pipe and pumps from which non-project water enters the Friant Division.

Title 22
The Domestic Water Quality and Monitoring Regulations specified by the State of California Health and Safety Code (Sections 4010-4037), and Administrative Code (Sections 64401 et seq.), as amended.

Type A water
This is non-project water that meets California drinking water standards. This water must be tested every year for the full list of Title 22 constituents. No in-stream monitoring is required to convey Type A water in the Friant Division.

Type B water
This is non-project water that has constituents that may exceed the California drinking water standards. This water must be tested every year for the full list of Title 22 constituents, plus annually for constituents of concern. Field monitoring is required of each source and of water upstream and downstream of the discharge point.

Type C water
This is non-project water from the same watershed as Project water that has not been appropriated by the United States for the Central Valley Project. Water from Soquel Creek diversion or the State Water Project are Type C water. No water quality analyses are required to convey this water in the Friant-Kern Canal.

Table 1. Water Quality Monitoring Requirements - Friant Division, Central Valley Project

Type of Water	Location	How often will a sample be collected?	What will be measured in the water?	Who will collect samples?
Project Water	Friant	January, April, June, October	Title 22 and bacterial constituents (1) (2)	Reclamation, MP-157
	Lake Woolomes	January, April, June, October	Title 22 and bacterial constituents (1) (2)	Reclamation, MP-157
Type A Non-Project Water		Every year	Title 22 and bacterial constituents (1) (2)	Contractor
Type B Non-Project Water		Every year	Title 22 and bacterial constituents (1) (2)	Contractor
		Every month (5)	Constituents of concern (5)	Contractor
		Every week (5)	EC, turbidity, etc.(3) (5)	Friant Water Authority
Type C Non-Project Water		None required		
Project water	Upstream of each Type B discharge (4)	Every week (5)	EC, turbidity, etc.(3) (5)	Friant Water Authority
	Downstream of each Type B discharge (4)	Every week (5)	EC, turbidity, etc.(3) (5)	Friant Water Authority

Notes:
(1) California Department of Health Services, California Code of Regulations, Title 22, Division 4, Chapter 15, Domestic Water Quality and Monitoring, *http://www.dhs.ca.gov/ps/ddwem/publications/Regulations/regulations_index.htm.*
(2) Cryptosporidium, Giardia, total coliform bacteria
(3) Field measurements.
(4) Location to be determined by the Contracting Officer
(5) To be determined by the Contracting Officer, if necessary.

This water quality monitoring program is subject to change at any time by the Contracting Officer.

Revised: 08/16/2007 SCC-107

U.S. Bureau of Reclamation
Friant Water Authority
Friant Division, California
Water Quality Monitoring Requirements

Table 2a. Water Quality Constituents

CONSTITUENT OR PARAMETER	Units	Recommended Method	California DHS Maximum Contaminant Level		CAS Registry Number
Primary Constituents (CCR § 64431)					
Aluminum	µg/L	EPA 200.7	1,000	1	7429-90-5
Antimony	µg/L	EPA 200.8	6	1	7440-36-0
Arsenic	µg/L	EPA 200.8	10	16	7440-38-2
Asbestos	MFL > 10µm	EPA 100.2	7	1	1332-21-4
Barium	µg/L	EPA 200.7	1,000	1	7440-39-3
Beryllium	µg/L	EPA 200.7	4	1	7440-41-7
Cadmium	µg/L	EPA 200.7	5	1	7440-43-9
Chromium	µg/L	EPA 200.7	50	1	7440-47-3
Cyanide	µg/L	EPA 335.4	150	1	57-12-5
Fluoride	mg/L	EPA 300.1	2	1	16984-48-8
Mercury (inorganic)	µg/L	EPA 245.1	2	1	7439-97-6
Nickel	µg/L	EPA 200.7	100	1	7440-02-0
Nitrate (as NO3)	mg/L	EPA 300.1	45	1	7727-37-9
Total Nitrate + Nitrite (as Nitrogen)	mg/L	EPA 353.2	10	1	
Nitrite (as Nitrogen)	mg/L	EPA 300.1	1	1	14797-65-0
Selenium	µg/L	EPA 200.8	50	1	7782-49-2
Thallium	µg/L	EPA 200.8	2	1	7440-28-0
Secondary Constituents (CCR § 64449)					
Aluminum	µg/L	EPA 200.7	200	6	7429-90-5
Chloride	mg/L	EPA 300.1	250/500/600	7	16887-00-6
Color	units	SM 2120 B	15	6	
Copper	µg/L	EPA 200.7	1,000	6	7440-50-8
Foaming agents (MBAS)	mg/L	SM 5540 C	0.5	6	
Iron	µg/L	EPA 200.7	300	6	7439-89-6
Manganese	µg/L	EPA 200.7	50	6	7439-96-5
Methyl-tert-butyl ether (MtBE)	µg/L	EPA 524.2	5	6	1634-04-4
Odor - Threshold	threshold units	SM 2150 B	3	6	
Silver	µg/L	EPA 200.7	100	6	7440-22-4
Specific conductance (EC)	µS/cm	SM 2510 B	900/1600/2200	7	
Sulfate	mg/L	EPA 300.1	250/500/600	7	14808-79-8
Thiobencarb	µg/L	EPA 525.2	1	6	28249-77-6
Total dissolved solids (TDS)	mg/L	SM 2540 C	500/1000/1500	7	
Turbidity	NTU	EPA 180.1	5	6	
Zinc	mg/L	EPA 200.7	5	6	7440-66-6

Table 2a. Water Quality Constituents

CONSTITUENT OR PARAMETER	Units	Recommended Method	California DHS Maximum Contaminant Level		CAS Registry Number
Other required analyses (CCR § 64449 (b)(2); CCR § 64670)					
Bicarbonate	mg/L	SM 2320B		8	
Calcium	mg/L	SM3111B		8,12	7440-70-2
Carbonate	mg/L	SM 2320B		8	
Copper	mg/L	EPA 200.7	1.3	14	7440-50-8
Hardness	mg/L	SM 2340 B		8	
Hydroxide alkalinity	mg/L	SM 2320B		8,12	
Lead	mg/L	EPA 200.8	0.015	14	7439-92-1
Magnesium	mg/L	EPA 200.7		8	7439-95-4
Orthophosphate	mg/L	EPA 365.1		12	
pH	units	EPA 150.1		8,12	
Silica	mg/L	EPA 200.7		12	
Sodium	mg/L	EPA 200.7		8	7440-23-5
Temperature	degrees C	SM 2550		12	
Radiochemistry (CCR § 64442)					
Radioactivity, Gross Alpha	pCi/L	SM 7110C	15	3	
Microbiology					
Cryptosporidium	org/liter		No MCL, measure for presence (surface water only)		
Fecal Coliform	MPN/100ml		No MCL, measure for presence (surface water only)		
Giardia	org/liter		No MCL, measure for presence (surface water only)		
Total Coliform bacteria	MPN/100ml		No MCL, measure for presence (surface water only)		
Organic Constituents (CCR § 64444)					
EPA 504.1 method					
Dibromochloropropane (DBCP)	µg/L	EPA 504.1	0.2	4	96-12-8
Ethylene dibromide (EDB)	µg/L	EPA 504.1	0.05	4	206-93-4
EPA 505					
Chlordane	µg/L	EPA 505	0.1	4	57-74-9
Endrin	µg/L	EPA 505	2	4	72-20-8
Heptachlor	µg/L	EPA 505	0.01	4	76-44-8
Heptachlor epoxide	µg/L	EPA 505	0.01	4	1024-57-3
Hexachlorobenzene	µg/L	EPA 505	1	4	118-74-1
Hexachlorocyclopentadiene	µg/L	EPA 505	50	4	77-47-4
Lindane (gamma-BHC)	µg/L	EPA 505	0.2	4	58-89-9
Methoxychlor	µg/L	EPA 505	30	4	72-43-5
Polychlorinated biphenyls	µg/L	EPA 505	0.5	4	1336-36-3
Toxaphene	µg/L	EPA 505	3	4	8001-35-2
EPA 508 Method					
Alachlor	µg/L	EPA 508.1	2	4	15972-60-8
Atrazine	µg/L	EPA 508.1	1	4	1912-24-9
Simazine	µg/L	EPA 508.1	4	4	122-34-9

Table 2a. Water Quality Constituents

CONSTITUENT OR PARAMETER	Units	Recommended Method	California DHS Maximum Contaminant Level		CAS Registry Number
EPA 515.3 Method					
Bentazon	µg/L	EPA 515	18	4	25057-89-0
2,4-D	µg/L	EPA 515.1-4	70	4	94-75-7
Dalapon	µg/L	EPA 515.1-4	200	4	75-99-0
Dinoseb	µg/L	EPA 515.1-4	7	4	88-85-7
Pentachlorophenol	µg/L	EPA 515.1-4	1	4	87-86-5
Picloram	µg/L	EPA 515.1-4	500	4	1918-02-1
2,4,5-TP (Silvex)	µg/L	EPA 515.1-4	50	4	93-72-1
EPA 524.2 Method (Volatile Organic Chemicals)					
Benzene	µg/L	EPA 524.2	1	4	71-43-2
Carbon tetrachloride	µg/L	EPA 524.2	0.5	4	56-23-5
1,2-Dibromomethane	µg/L	EPA 524.2	0.05		106-93-4
1,2-Dichlorobenzene	µg/L	EPA 524.2	600	4	95-50-1
1,4-Dichlorobenzene	µg/L	EPA 524.2	5	4	106-46-7
1,1-Dichloroethane	µg/L	EPA 524.2	5	4	75-34-3
1,2-Dichloroethane	µg/L	EPA 524.2	0.5	4	107-06-2
1,1-Dichloroethylene	µg/L	EPA 524.2	6	4	75-35-4
cis-1,2-Dichloroethylene	µg/L	EPA 524.2	6	4	156-59-2
trans-1,2-Dichloroethylene	µg/L	EPA 524.2	10	4	156-60-5
Dichloromethane	µg/L	EPA 524.2	5	4	75-09-2
1,2-Dichloropropane	µg/L	EPA 524.2	5	4	78-87-5
1,3-Dichloropropene	µg/L	EPA 524.2	0.5	4	542-75-6
Ethylbenzene	µg/L	EPA 524.2	300	4	100-41-4
Methyl-tert-butyl ether (MtBE)	µg/L	EPA 524.2	13	4	1634-04-4
Monochlorobenzene	µg/L	EPA 524.2	70	4	108-90-7
Styrene	µg/L	EPA 524.2	100	4	100-42-5
1,1,2,2-Tetrachloroethane	µg/L	EPA 524.2	1	4	79-34-5
Tetrachloroethylene (PCE)	µg/L	EPA 524.2	5	4	127-18-4
Toluene	µg/L	EPA 524.2	150	4	108-88-3
1,2,4-Trichlorobenzene	µg/L	EPA 524.2	5	4	120-82-1
1,1,1-Trichloroethane	µg/L	EPA 524.2	200	4	71-55-6
1,1,2-Trichloroethane	µg/L	EPA 524.2	5	4	79-00-5
Trichloroethylene (TCE)	µg/L	EPA 524.2	5	4	79-01-6
Trichlorofluoromethane	µg/L	EPA 524.2	150	4	75-69-4
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/L	EPA 524.2	1,200	4	76-13-1
Total Trihalomethanes	ug/L	EPA 524.2	80	10	
Vinyl chloride	µg/L	EPA 524.2	0.5	4	75-01-4
Xylene(s)	µg/L	EPA 524.2	1,750	4	1330-20-7
EPA 525.2 Method					
Benzo(a)pyrene	µg/L	EPA 525.2	0.2	4	50-32-8
Di(2-ethylhexyl)adipate	µg/L	EPA 525.2	400	4	103-23-1
Di(2-ethylhexyl)phthalate	µg/L	EPA 525.2	4	4	117-81-7
Molinate	µg/L	EPA 525.2	20	4	2212-67-1
Thiobencarb	µg/L	EPA 525.2	70	4	28249-77-6
EPA 531.1 Method					
Carbofuran	µg/L	EPA 531.1-2	18	4	1563-66-2
Oxamyl	µg/L	EPA 531.1-2	50	4	23135-22-0

Table 2a. Water Quality Constituents

CONSTITUENT OR PARAMETER	Units	Recommended Method	California DHS Maximum Contaminant Level		CAS Registry Number
EPA 547 Method					
Glyphosate	µg/L	EPA 547	700	4	1071-83-6
EPA 548.1 Method					
Endothal	µg/L	EPA 548.1	100	4	145-73-3
EPA 549.2 Method					
Diquat	µg/L	EPA 549.2	20	4	85-00-7
EPA 613 Method					
2,3,7,8-TCDD (Dioxin)	µg/L	EPA 1613	0.00003	4	1746-01-6

Source Data:
Adapted from Marshack, Jon B. August 2003. A Compilation of Water Quality Goals. Prepared for the California Environmental Protection Agency, Regional Water Quality Control Board.

U.S. Bureau of Reclamation
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Table 2b. Unregulated Chemicals (CCR § 64450)

CONSTITUENT OR PARAMETER	Units	Recommended Method	California Department of Health Services Notification Level		Response Level	CAS Registry Number
Boron	mg/L	EPA 200.7	1	9, 17	10	7440-42-8
n-Butylbenzene	µg/L	EPA 524.2	260	17	2,600	104-51-8
sec-Butylbenzene	µg/L	EPA 524.2	260	17	2,600	135-98-8
tert-Butylbenzene	µg/L	EPA 524.2	260	17	2,600	98-06-6
Carbon disulfide	µg/L		160	17	1,600	
Chlorate	µg/L	EPA 300.1	0.8	17	8	
2-Chlorotoluene	µg/L	EPA 524.2	140	17	1,400	95-49-8
4-Chlorotoluene	µg/L	EPA 524.2	140	17	1,400	106-43-4
Dichlorofluoromethane (Freon 12)	µg/L	EPA 524.2	1,000	9,17	10,000	75-43-4
1,4-Dioxane	µg/L	SM 8270	3	17	300	123-91-1
Ethylene glycol	µg/L	SM 8015	1,400	17	14,000	107-21-1
Formaldehyde	µg/L	SM 6252	100	17	1,000	50-00-0
n-Propylbenzene	µg/L		260	17	2,600	
HMX	µg/L	SM 8330	350	17	3,500	2691-41-0
Isopropylbenzene	µg/L		770	17	7,700	
Manganese	mg/L		1	17	5	
Methyl isobutyl ketone	µg/L		120	17	1,200	
Napthalene	µg/L	EPA 524.2	17	17	170	91-20-3
n-nitrosodiethylamine (NDEA)	µg/L	1625	0.01	17	0.1	
n-nitrosodimethylamine (NDMA)	µg/L	1625	0.01	17	0.2	
n-nitroso-n-propylamine (NDPA)	µg/L	1625	0.01	17	0.5	
Perchlorate	µg/L	EPA 314	6	9, 17	60	13477-36-6
Propachlor	µg/L	EPA 507 or 525	90	17	900	1918-16-7
p-Isopropyltoluene	µg/L	EPA 524.2	770	17	7,700	99-87-6
RDX	µg/L	SM 8330	0.30	17	30	121-82-4
tert-Butyl alcohol (ethanol)	µg/L	EPA 524.2	12	9,17	1,200	75-65-0
1,2,3-Trichloropropane (TCP)	ug/L	EPA 524.2	0.005	9,17	0.5	96-18-4
1,2,4-Trimethylbenzene	µg/L	EPA 524.2	330	17	3,300	95-63-6
1,3,5-Trimethylbenzene	µg/L	EPA 524.2	330	17	3,300	95-63-6
2,4,6-Trinitrotoluene (TNT)	µg/L	SM 8330	1	17	100	
Vanadium	mg/L	EPA 286.1	0.05	9,17	0.5	7440-62-2

Revised: 05/17/2007

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Notes for Tables 2a and 2b

Title 22. California Code of Regulations, California Safe Drinking Water Act and Related Laws and Regulations. February 2007.
http://www.dhs.ca.gov/ps/ddwem/publications/lawbook/PDFs/dwregulations-02-06-07.pdf

[1] Table 64431-A. Maximum Contaminant Levels, Inorganic Chemicals
[2] Table 64432-A. Detection Limits for Purpose of Reporting (DLRs) for Regulated Inorganic Chemicals
[3] Table 644442. Radionuclide Maximum contaminant Levels (MCLs) and Detection Levels for Reporting (DLRs)
[4] Table 64444-A. Maximum Contaminant Levels Organic Chemicals
[5] Table 64445.1-A. Detection Limits for Reporting (DLRs) for Regulated Organic Chemicals
[6] Table 64449-A. Secondary Maximum Contaminant Levels "Consumer Acceptance Levels"
[7] Table 64449-B. Secondary Maximum Contaminant Levels "Consumer Acceptance Levels"
[8] § 64449(b)(2)
[9] Table 64450. Unregulated Chemicals
[10] Appendix 64481-A. Typical Origins of Contaminants with Primary MCLs
[11] Table 64533-A. Maximum Contaminant Levels and Detection Limits for Reporting Disinfection Byproducts
[12] § 64670.(c)
[13] Table 64678-A. DLRs for Lead and Copper
[14] § 64678 (d)
[15] § 64678 (e)
[16] New Federal standard as of 1/23/2006
[17] Dept Health Services Drinkig Water Notification Levels (June 2006)

RECLAMATION
Managing Water in the West

Table 3. Approved Laboratory List for the Mid-Pacific Region Environmental Monitoring Branch (MP-157)

Basic Laboratory	**Address**	2218 Railroad Avenue Redding, CA 96001 USA
	Contact	Nathan Hawley, Melissa Hawley, Ricky Jensen
	P/F	(530) 243-7234 / (530) 243-7494
	Email	nhawley@basiclab.com (QAO), mhawley@basiclab.com (PM), jcady@basiclab.com (quotes),
		poilar@basiclab.com (sample custody), khawley@basiclab.com (sample custody)
	CC Info	nhawley@basiclab.com, jcady@basiclab.com (sample custody)
	Methods	*Approved only for inorganic parameters (metals, general chemistry)*
BioVir Analytical Laboratories	**Address**	685 Stone Road Unit 6 Benicia, CA 94510 USA
	Contact	Rick Danielson, Lab Director
	P/F	(707) 747-5906 / (707) 747-1751
	Email	red@biovir.com, csj@biovir.com, lb@biovir.com, QAO Jim Truscott jrt@biovir.com
	Methods	*Approved for all biological and pathogenic parameters*
Block Environmental Services	**Address**	2451 Estand Way Pleasant Hill, CA 94523 USA
	Contact	David Block
	P/F	(925) 682-7200 / (925) 686-0399
	Email	dblock@blockenviron.com
	Methods	*Approved for Toxicity Testing.*
California Laboratory Services	**Address**	3249 Fitzgerald Road Rancho Cordova, CA 95742
	Contact	Raymond Oslowski
	P/F	(916) 638-7301 / (916) 638-4510
	Email	rayo@californialab.com
	Methods	*Approved for Chromium VI*
Caltest Analytical Laboratory	**Address**	1885 North Kelly Road Napa, CA 94558
	Contact	Bill Svoboda, Project Manager x29
	P/F	(707) 258-4000 / (707) 226-1001
	Email	bsvoboda@caltestlab.com
	Methods	*Approved for all inorganic parameters and bioligical parameters*
Columbia Environmental Resource Center	**Address**	4200 New Haven Road Columbia, MO 65201 USA
	Contact	Tom May, Research Chemist
	P/F	(573) 876-1858 / (573) 876-1896
	Email	tmay@usgs.gov
	Methods	*Approved for mercury in biological tissue*
Data Chem Laboratories	**Address**	960 West LeVoy Drive Salt Lake City, UT 84123-2547 USA
	Contact	Bob DiRienzo, Kevin Griffiths-Project Manager, Rand Potter - Project Manager, asbestos
	P/F	(801) 266-7700 / (801) 268-9992
	Email	griffiths@datachem.com, Potter@datachem.com Invoicing: (Justin) pate@datachem.com
	Methods	*Approved for asbestos, metals, organochlorine pesticides and PCBs in solids*
Dept. of Fish & Game - WPCL	**Address**	2005 Nimbus Road Rancho Cordova, CA 95670 USA
	Contact	David B. Crane
	P/F	(916) 358-2858 / (916) 985-4301
	Email	dcrane@ospr.dfg.ca.gov
	Methods	*Approved only for metals analysis in tissue.*
Frontier Geosciences	**Address**	414 Pontius North Seattle, WA 98109 USA
	Contact	Shelly Fank - QA Officer, Matt Gomes-Project Manager
	P/F	(206) 622-6960 / (206) 622-6870
	Email	shellyf@frontiergeosciences.com, mattg@frontiergeosciences.com
	Methods	*in low level metals analysis.*

Fruit Growers Laboratory	**Address**	853 Corporation Street Santa Paula, CA 93060 USA
	Contact	David Terz, QA Director
	P/F	(805) 392-2024 / (805) 525-4172
	Email	davidt@fglinc.com
	Methods	*Approved for all inorganic and organic parameters in drinking water.*
Montgomery Watson/Harza Laboratories	**Address**	750 Royal Oaks Drive Ste. 100 Monrovia, CA 91016 USA
	Contact	Allen Glover (project manager), Bradley Cahoon (quotes)
	P/F	(916) 374-8030, 916-996-5929 (AG-cell) / (916) 374-8061
	Email	Allen.Glover@us.mwhglobal.com, Bradley.Cahoon@us.mwhglobal.com
	CC Info	cc. Sam on all communications to Allen. Samer.Momani@us.mwhglobal.com
	Methods	*Approved for all inorganic and organic parameters in drinking water*
Olson Biochemistry Laboratories	**Address**	SDSU: Box 2170, ACS Rm. 133 Brookings, SD 57007 USA
	Contact	Nancy Thiex, Laboratory Director
	P/F	(605) 688-5466 / (605) 688-6295
	Email	Nancy.Thiex@sdstate.edu
	CC Info	For re-analysis: contact Zelda McGinnis-Schlobohm and Nancy Anderson
		Zelda.Schobohm@SDSTATE.EDU, Nancy.Anderson@SDSTATE.EDU
		For analysis questions only: just CC. Nancy Anderson
	Methods	*Approved only for low level selenium analysis.*
Severn Trent Laboratories	**Address**	880 Riverside Parkway West Sacramento, CA 95605 USA
	Contact	Jeremy Sadler
	P/F	(916) 374-4381 / (916) 372-1059
	Email	jsadler@stl-inc.com
	Methods	*Approved for all inorganic parameters and hazardous waste organics* ***except for Ammonia as Nitrogen*** *.* *Ag analysis in sediment, when known quantity is present, request 6010B*
Sierra Foothill Laboratory, Inc.	**Address**	255 Scottsville Blvd, Jackson, CA 95642
	Contact	Sandy Nurse (Owner) or Dale Gimble (QA Officer)
	P/F	(209) 223-2800 / (209) 223-2747
	Email	sandy@sierralab.com, CC: dale@sierralab.com
	Methods	*Approved for all inorganic parameters, microbiological parameters, acute and chronic toxicity.*
Twining Laboratories, Inc.	**Address**	2527 Fresno Street Fresno, CA 93721 USA
	Contact	Jim Brownfield (QA Officer), Sample Control (for Bottle Orders)
	P/F	(559) 268-7021 / (559) 268-0740
	Email	JimB@twining.com cc. to JosephU@twining.com
	Methods	*Approved only for general chemistry and boron analysis.*
U.S. Geological Survey - Denver	**Address**	Denver Federal Center Building 20, MS 973 Denver, CO 80225 USA
	Contact	Stephen A. Wilson
	P/F	(303) 236-2454 / (303) 236-3200
	Email	swilson@usgs.gov
	Methods	*Approved only for inorganic parameters in soil .*
USBR Technical Service Center Denver Soils	**Address**	Denver Federal Center Building 67, D-8750 Denver, CO 80225-0007 USA
	Contact	Juli Fahy or Stan Conway
	P/F	(303) 445-2188 / (303) 445-6351
	Email	jfahy@do.usbr.gov
	Methods	*Approved only for general physical analysis in soils.*
Western Environmental Testing Laboratories	**Address**	475 East Greg Street # 119 Sparks, NV 89431 USA
	Contact	Ginger Peppard (Customer Service Manager), Andy Smith (Lab Director), Michelle Kramer
	P/F	(775) 355-0202 / (775) 355-0817
	Email	ginger@WETLaboratory.com, andy@WETLaboratory.com, michelle@WETLaboratory.com
	Methods	*Approved only for inorganic parameters (metals, general chemistry).*

Revised: 04/16/2007 MP-157

Appendix B – FWA and DEID Operational Exchange Agreement

AGREEMENT

This Agreement is made and entered into this 1st day September, 2009 by and between The FRIANT WATER AUTHORITY ("FWA") and DELANO-EARLIMART IRRIGATION DISTRICT (Delano-Earlimart).

W I T N E S S E T H:

WHEREAS, the FWA operates the Friant-Kern Canal (Canal); and

WHEREAS, Delano-Earlimart desires to introduce previously banked Central Valley Project (Project) water into the Canal through the interconnection with the Cross Valley Canal (CVC); and

WHEREAS, FWA, as the operating non-federal entity, is willing to facilitate the return of said water in compliance with United State Bureau of Reclamation's (Reclamation) approval criteria.

NOW, THEREFORE, IT IS BE IT RESOLVED as follows:

1. The term of this Agreement is effective from February 1, 2009 through February 28, 2026.
2. Delano-Earlimart shall provide the FWA with schedule(s) at least 24 hours in advance of all proposed deliveries into and diversions from the Canal. Such schedule(s) shall be subject to approval by FWA.
3. FWA shall accept only Project water into the Canal from Delano-Earlimart f for direct delivery or by exchange to one or more of the Friant Division long-term water service contracting members (Exchangers) located within various reaches of the Canal where said return water is introduced. Such Exchangers (s) will be identified by the FWA on a periodic basis with their accounting.
4. FWA shall: (a) account for the volume of previously banked Project water that Delano-Earlimart delivers into the Canal and is delivered by direct delivery or by exchange and (b) limit Delano-Earlimart deliveries under this Agreement to such volume.

5. The terms for the delivery of water into the Canal shall be consistent with terms required by Reclamation and related compliance documents including water quality monitoring and environmental compliance among other approval criteria required by Reclamation.

IN WITNESS WHEREOF, the FWA and Delano-Earlimart have executed this Agreement on the day and year first hereinabove written.

FRIANT WATER AUTHORITY

By: _____
Ronald D. Jacobsma, General Manager

DELANO-EARLIMART IRRIGATION DISTRICT

By: _____
Dale R. Brogan, General Manager

Appendix C – Comments Received from AEWSD

THE LAW OFFICES OF
Young Wooldridge
A Limited Liability Partnership • Est. 1939
Steven M. Torigiani, Partner

November 5, 2009

VIA U.S. MAIL, FAX (559-487-5194) &
E-MAIL: minthavong@usbr.gov

Mr. Michael T. Inthavong
Department of the Interior
BUREAU OF RECLAMATION
1243 "N" Street
Fresno, CA 93721

RE: Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) - Delano-Earlimart Irrigation District and Rosedale-Rio Bravo Water Storage District Water Banking Program 2009-2026 (EA-09-92 / Draft FONSI-09-92)

Dear Mr. Inthavong:

On behalf of Arvin-Edison Water Storage District, please provide the enclosed comments on the above-referenced EA/FONSI.

Please do not hesitate to call if you have any questions.

Very truly yours,

STEVEN M. TORIGIANI

Enclosures (Comment Letter; Appendix to Comment Letter; Schmidt letter, November 5, 2009; Arvin-Edison WSD letter to FWA, September 30, 2009; Arvin-Edison WSD letter to Reclamation, October 23, 2009; Map of Canal Interconnections)

ARVIN-EDISON WATER STORAGE DISTRICT

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November 5, 2009

VIA U.S. MAIL, FAX (559-487-5194) &
E-MAIL: minthavong@usbr.gov

Mr. Michael T. Inthavong
Department of the Interior
BUREAU OF RECLAMATION
1243 "N" Street
Fresno, CA 93721

RE: Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) - Delano-Earlimart Irrigation District and Rosedale-Rio Bravo Water Storage District Water Banking Program 2009-2026 (EA-09-92 / Draft FONSI-09-92)

Dear Mr. Inthavong:

Introduction and Background

Arvin-Edison Water Storage District ("Arvin-Edison" or "District") provides the following comments on the above-referenced draft EA and FONSI (collectively, "EA/FONSI") for the proposed Delano-Earlimart Irrigation District ("DEID") and Rosedale-Rio Bravo Water Storage District ("Rosedale") Water Banking Program ("Program"). As will be explained in detail later, Arvin-Edison's primary concerns about the Program relate to one proposed point of discharge into the Friant-Kern Canal and to potentially significant water quality impacts to Arvin-Edison's surface and groundwater supplies, water banking programs, and associated negative impacts on crops in the District. As currently proposed, the Program would permit Rosedale and DEID to deliver Cross Valley Canal ("CVC") water through the CVC Intertie to the Friant-Kern Canal just a few feet upstream of Arvin-Edison's Intake Canal. Practically speaking, this means that Arvin-Edison will be forced to receive CVC water instead of much its higher quality Friant-Kern Canal water from Millerton Lake, the environmental impacts of which were not seriously considered or otherwise adequately studied in the EA, as confirmed by the opinions of water quality expert Dr. Kenneth D. Schmidt detailed in his enclosed letter to my attention dated November 5, 2009.

As background, the Bureau of Reclamation ("Bureau" or "Reclamation") requested that comments be provided within ten (10) days of publication of the EA/FONSI for the above water banking Program by October 29, 2009. Due to the serious and precedent setting nature of the proposed program, Arvin-Edison requested by enclosed letter dated October 23, 2009, that it be given a thirty (30) day extension to provide comment. Said letter explained in detail why a 30-day comment period is required and appropriate in light of serious contractual, water quality, and other environmental concerns raised by the Program, which were only given superficial treatment in the EA.

To our extreme frustration and disappointment, the Bureau did not issue an official letter in response to our October 23, 2009 request for extension by the October 29, 2009 deadline, despite numerous inquiries from the District, including multiple calls and emails to various Reclamation employees. Instead, Reclamation personnel informed me verbally and by email that the comment period would be extended by only seven (7) days, or five (5) business days, from the October 29, 2009 deadline to November 5, 2009.

It should also be noted that Arvin-Edison also previously transmitted its CEQA comments on the same Program and met with Reclamation personnel on September 29, 2009 to point out our concerns about the Program and the glaring deficiencies in Reclamation's March 2008 "Policy for Accepting Non-Project Water into the Friant-Kern and Madera Canals." Arvin-Edison also explained its concerns regarding Friant-Kern Canal water quality standards in the enclosed September 30, 2009 letter to the Friant Water Authority ("FWA"). Despite our many protests, and in particular Reclamation's total lack of information regarding actual water quality in the Cross Valley Canal ("CVC") or Friant-Kern Canal ("FKC"), our request for extension of thirty days was ignored. Reclamation could and should have consulted available specific information regarding the significant differences in the quality of CVC and FKC water including water quality testing and any available reports.

Despite the surprisingly short comment period provided by Reclamation in light of the significant nature of the Program and the great difficultly of providing detailed comments on the complex issue of water quality impacts which Reclamation did not study in the EA, Arvin-Edison did retain water quality expert Dr. Kenneth D. Schmidt and developed, in the time available, what it hopes prove to be meaningful and constructive comments on the shortcomings of the EA/FONSI, including failure to consider the significant difference between CVC and FKC water quality. Arvin-Edison's comments on the EA/FONSI consist of this letter, the comments in the attached Appendix which correlate to more specific headings and page numbers in the EA/FONSI, the enclosed letter of Dr. Kenneth D. Schmidt dated November 5, 2009, Arvin-Edison's September 30, 2009 letter to FWA, Arvin-Edison's October 23, 2009 letter to Reclamation, and Map of Canal Interconnections.

Characteristics Unique to Arvin-Edison and the Close Proximity of its Intake Canal to the proposed discharge point to be used to return Program Water

Arvin-Edison is comprised of approximately 132,000 acres of prime farmland supplied with water from surface and groundwater supplies. Arvin-Edison was organized in 1942 for the express purpose of contracting with the United States for water service from the Central Valley Project ("CVP"). The Long-Term Renewal Contract between Reclamation and Arvin-Edison for water service from the Friant Division of the CVP provides for receipt of water stored in Millerton Lake delivered through the Friant-Kern Canal. That contract specifically provides that Class 1 Water "shall mean that supply of water stored in and flowing through Millerton Lake which ... will be available for delivery from Millerton Lake and the Friant-Kern and Madera Canals as dependable water supply during each year." (Contract No. 14-06-200-229-LTR1, pp. 5-6, ¶ 1(b2).) Similarly, with respect to Class 2 Water, the contract provides such water: "shall mean that supply of water which can be made available...for delivery from Millerton Lake and the Friant-Kern and Madera Canals in addition to the supply of Class 1 Water." (*Id.* at p. 6, ¶ 1(b3).) Friant-Kern Canal water is of exceptionally high quality and particularly suitable for crops grown in Arvin-Edison, including citrus and vineyards which are not tolerant of several constitutes of concern that are more prevalent in the Cross-Valley Canal water than the Friant-Kern Canal water. These constituents of concern include TDS, boron, sodium, chloride, bicarbonate and pH. Arvin-Edison also operates a water banking program whereby it temporarily stores and later returns water to Metropolitan Water District of Southern California, the State's largest M&I water user.

Physically, Arvin-Edison diverts most of its water through its Intake Canal located on the last reach and near the terminus of Friant-Kern Canal. Arvin-Edison then either delivers the water to its farmers by direct surface delivery via canal and pipeline, or uses the water to recharge the groundwater basin from which farmers and the District pump and distribute groundwater to grow a wide variety of high value agricultural crops with sprinkler irrigation and other methods. The Cross Valley Canal Intertie, which is proposed to be used by Rosedale to return water to DEID under the Program, would discharge into the Friant-Kern Canal less than 100 feet upstream of Arvin-Edison's Intake Canal. Arvin-Edison is the only FKC contractor taking water from the approximately 14 mile long reach/pool and will be bearing the brunt of receiving nearly all the CVC discharges into the FKC. In other words, the impacts from the discharge of CVC water are likely not going to be shared by several contractors and perhaps none of it will be seen by DEID which has its turnout approximately 34 miles upstream and over 3 check gate structures away from Arvin-Edison's Intake Canal. Rather, due to the close proximity between the CVC Intertie and Arvin-Edison's Intake Canal, and the fact Arvin-Edison is the last contractor to receive water delivered into the final reach of the Friant-Kern Canal, all or most discharges from the proposed Program will end up in Arvin-Edison's surface water supply and groundwater supply. **It should be noted that, if this particular discharge point was removed from the proposed program, or if it discharged into the FKC upstream of DEID's turnout rather than Arvin-Edison's, Arvin-Edison's concerns would be greatly diminished.** This is particularly significant, in part, because Arvin-Edison overlies a closed groundwater basin and constituents of concern tend to accumulate in the groundwater and become worse over time.

In light of the unique position of Arvin-Edison relative to Program discharges, to say that Arvin-Edison is very concerned about the water quality affects of this proposed Program is an understatement. To that end, Arvin-Edison has retained groundwater quality expert Dr. Kenneth D. Schmidt to provide water quality opinions regarding the proposed Program. Also, on September 29, 2009, Arvin-Edison staff met with Reclamation Area Manager Michael Jackson and members of his staff to explain in detail Arvin-Edison's concerns, and at which time Arvin-Edison provided supporting data of the water quality impacts expected to be experienced by Arvin-Edison should the Program go forward as proposed. Of particular concern was the higher "salt" constituents in the water supply proposed to be introduced into the Friant-Kern Canal. Despite this and other efforts to inform interested parties of the problem, the draft EA makes no effort to address Arvin-Edison's water quality concerns, analyze the data Arvin-Edison provided, or analyze water quality data which is readily available from other agencies or sources. Rather, the EA simply and summarily states that "...there would be no significant adverse impacts to water quality. . .", with which (among other things) Arvin-Edison disagrees. For the reasons provided herein and in the attachments and enclosures hereto, including Dr. Schmidt's letter, Arvin-Edison believes that the EA/FONSI do not comply with the National Environmental Policy Act.

The National Environmental Policy Act

The National Environmental Policy Act ("NEPA") is "our basic national charter for protection of the environment." (40 C.F.R. § 1500.1(a).) It requires Federal agencies to assess the environmental consequences of their actions before those actions are undertaken. (*Klammath-Siskiyou Wildlands Center v. BLM,* 387 F.3d 989, 993 (9th Cir.2004).) For "major federal actions significantly affecting the quality of the human environment," 42 U.S.C. § 4332(2)(C), the agency is required to prepare an environmental impact statement ("EIS"). (*Id.*)

NEPA requires agencies, such as Reclamation, to take seriously the potential environmental consequences of a proposed action. Courts have termed this critical evaluation a "hard look." (*Ocean Advocates v. U.S. Army Corps of Engineers*, 402 F.3d 846, 864 (9th Cir. 2005).) The Corps cannot avoid preparing an EIS by making conclusory assertions that an activity will have only an insignificant impact on the environment. (*Id.)* If an agency, such as the Corps, opts not to prepare an EIS, it must put forth a "convincing statement of reasons" that explain why the project will impact the environment no more than insignificantly. (*Id.)* This account proves crucial to evaluating whether the Corps took the requisite "hard look" at the potential impact of the dock extension. (*Id.)*

"[A]n EIS *must* be prepared if 'substantial questions are raised as to whether a project ... *may* cause significant degradation of some human environmental factor.' " (*Ocean Advocates, supra,* 402 F.3d at 864.) "To trigger this requirement a 'plaintiff need not show that significant effects *will in fact occur,*' [but] raise 'substantial questions whether a project may have a significant effect' is sufficient." (*Id.* at 864-865.)

The Council on Environmental Quality has adopted regulations governing the implementation of NEPA (40 C.F.R. 1500.1 *et seq.*) In determining whether a

federal action requires an EIS because it significantly affects the quality of the human environment, an agency must consider what "significantly" means. The regulations give it two components: context and intensity. (40 C.F.R. § 1508.27.) Context refers to the setting in which the proposed action takes place, in this case the proximity of the proposed action to prime farmlands in Arvin-Edison and Arvin-Edison's water supplies transmitted through its Intake Canal. (*See id.* § 1508.27(a).) Intensity means "the severity of the impact." (*Id.* § 1508.27(b).)

In considering the severity of the potential environmental impact, a reviewing agency may consider up to ten factors that help inform the "significance" of a project, including: (1) a significant effect exists even if the agency believes the project's effects on balance are beneficial; (2) the degree to which the project affects public health or safety; (3) unique characteristics of the geographic area such as proximity to historic or cultural resources, prime farmlands, wetlands, wild and scenic rivers and ecologically critical areas; (4) the degree to which the project's environmental effects are likely to be highly controversial; (5) the degree to which the project's possible environmental effects are highly uncertain or involve unique or unknown risks; (6) the degree to which the action may establish a precedent for future actions with significant effects; (7) whether the action bears some relationship to other actions with individually insignificant but cumulatively significant impacts; (8) the degree to which the action may adversely affect districts, sites, highways, structures or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources; (9) the degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973; and (10) whether the action threatens a violation of Federal, State, or local law or requirements for protection of the environment. (*Id.* § 1508.27(b).) Courts have held that any one of these factors may be sufficient to require preparation of an EIS in appropriate circumstances. (*Ocean Advocates, supra,* 402 F.3d at 865.)

A cumulative impact is defined in NEPA's implementing regulations as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.... Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 CFR 1508.7.) In considering cumulative impact, an agency must provide "some quantified or detailed information; ... [g]eneral statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided." (*Neighbors of Cuddy Mountain v. U.S. Forest Service,* 137 F.3d 1372, 1379-1380 (9th Cir. 1998) (internal quotation marks omitted).) A cumulative analysis "must be more than perfunctory; it must provide 'a useful analysis of the cumulative impacts of past, present, and future projects.' (*Kern v. U.S. Bureau of Land Management,* 284 F.3d at 1062, 1075 (9th Cir. 2002) (quoting *Muckleshoot Indian Tribe v. United States Forest Serv.,* 177 F.3d 800, 810 (9th Cir.1999))." (*Ocean Advocates v. U.S. Army Corps of Engineers*, 402 F.3d 846, 868 (9th Cir. 2005).)

Under Ninth Circuit precedent, the cumulative impact analysis requires two critical features: First, it must not only describe related projects but also enumerate the environmental effects of those projects. Second, it must consider the

interaction of multiple activities and cannot focus exclusively on the environmental impacts of an individual project. (*Oregon Natural Resources Council Fund v. Brong,* 492 F.3d 1120, 1133 (9th Cir.2007).) The EA must offer quantified or detailed data about the effects. (*See Klammath-Siskiyou Wildlands Center v. BLM,* 387 F.3d 989, 995 (9th Cir.2004) (problem with cumulative effects tables is that they do not provide objective quantification of the impacts).) As mentioned below, the EA fails to consider the cumulative water quality impacts from Program discharges into the Friant-Kern Canal, which may occur as the discharge point is used by other projects for water banking, recirculation, water transfers, etc.

Opinions of Groundwater Quality Expert Kenneth D. Schmidt

As briefly mentioned above, the District retained Kenneth D. Schmidt and Associates to evaluate the potential water quality impacts. Dr. Schmidt has extensive experience and expertise regarding Kern County groundwater and surface water quality, including with respect to Arvin-Edison's principal surface water supply, Friant-Kern/Millerton Lake water, and irrigation uses within Arvin-Edison. A copy of Dr. Schmidt's letter dated November 5, 2009, which includes his resume, tables and other attachments, is enclosed. In the letter, Dr. Schmidt details his extensive experience with water quality in the region including in Arvin-Edison (see pp. 1-2 and attached resume), and provides water quality data and opinions regarding water quality aspects of the proposed Program and related deficiencies in the EA and Reclamation's March 2008 Policy for Accepting Non-Project Water into the Friant-Kern and Madera Canals. Dr. Schmidt's opinions are summarized below.

1. **Neither Reclamation's Policy, Monitoring Nor Title 22 Ensure That Water Quality is Protected and Agricultural Users in Arvin-Edison are not Adversely Affected by Non-Project Water.** Reclamation's March 2008 "Policy for Accepting Non-Project Water into the Friant-Kern and Madera Canals" (EA, Appendix "A" ("Policy")) states that: "The monitoring requirements contained herein are intended to ensure that water quality is protected and that domestic and agricultural water users are not adversely impacted by the introduction of the non-project water." (Emphasis added.) However, monitoring alone does not ensure this or protection for irrigation uses. Type A non-project water requires compliance with Title 22 drinking water standards. However, "[t]hese standards do not cover water quality criteria for irrigation suitability," and "generally are not protective of the water quality for irrigation use." Some of the important constituents of concern for irrigation use of water not adequately covered by Title 22 monitoring are boron, sodium, bicarbonate, chloride, pH, and sodium absorption ratio. Boron can adversely affect certain crops, and boron concentrations in well water in Arvin-Edison have been a concern since the late 1920's. Paul Bailey, Consulting Engineer, prepared a report in January 1945 for Arvin-Edison on the occurrence of boron in the underground water in Arvin-Edison. He indicated that replenishment of high boron groundwater with low boron water could mitigate the high concentrations. One of the primary benefits and value of Friant-Kern water, besides the amount and low salinity of the water, is the very low boron concentrations that are normally present. In summary, monitoring requirements alone do not ensure protection of the water quality, and Reclamation's present monitoring requirements and Title 22 Standards generally are not protective of the

water quality for irrigation uses. (Letter from Dr. Kenneth D. Schmidt to Steven C. Collup, dated November 5, 2009 ("Schmidt Report") at pp. 2-3.)

2. **The EA/FONSI Avoids Testing and Analysis by Erroneously Assuming that the Quality of the Water put into the Cross Valley Canal is Representative of the Water Quality in the Friant-Kern Canal**. For example, as Dr. Schmidt points out, Reclamation's non-project water Policy for Type C non-project water (e.g., SWP water in the CVC discharged into the Friant-Kern Canal) states that no water quality analysis is required to discharge such water into the Friant-Kern Canal. This assumes CVC water and Friant-Kern Canal water are chemically the same. However, water pumped from the CVC into the Friant-Kern Canal is not chemically the same water as from the Friant Division of the CVP. (Schmidt Report, p. 3.)

3. **The Quality of Arvin-Edison's Water Will Be Degraded if Arvin-Edison is Forced to Take CVC Water at its Intake Canal.** During the past decade, the State Regional Water Quality Control Board, Central California Region, has continued to implement an anti-degradation policy. (Schmidt Report, p. 3 & Attachment C.) Contrary to this policy, a comparison of water quality samples at Arvin-Edison's Intake Canal, both when Friant water and non-Friant water are being delivered (Schmidt Report, Tables 1, 2 &3), indicates that the quality of water at Arvin-Edison's Intake Canal will be degraded by the proposed Program. For example, pH levels of CVC water at Arvin-Edison's Intake Canal has usually exceeded the normal range, which can be a detriment to crop production. Furthermore, whereas bicarbonate concentrations in Friant water averaged 2 mg/l during 2003-2007, concentrations in non-Friant CVC Canal water exceeded 90 mg/l during the same period, which is undesirable and particularly deleterious for overhead sprinkler irrigation. Moreover, assuming 10,000 acre-feet of CVC Canal water is discharged into the Friant-Kern Canal by the proposed Program in any year, the proposed Program would increase the average TDS concentration of Arvin-Edison's water at the Intake Canal from 72 mg/l to 94 mg/l, and if all Arvin-Edison's Friant water was replaced with non-Friant CVC Canal water, the average TDS concentration at the Intake Canal would be increased to about 160 mg/l and the average boron concentration to about 0.15 mg/l. Thus, the quality of water at the Arvin-Edison Intake Canal will be degraded, if more and more CVC Canal water is used to replace FKC water. Of particular concern is when CVC water is used for irrigation in the District, such as in drought years when the proposed Program will likely be discharging into the FKC, which effects are magnified by evapotranspiration. This degradation of the quality of the water supply and the associated degradation of groundwater quality in Arvin-Edison as a result of replacing FKC water with other water of a lesser quality violates the State anti-degradation policy. (Schmidt Report, pp. 3-5.) Said degradation may also violate the above-referenced Long-Term Renewal Contract for water service between Arvin-Edison and Reclamation.

4. **Use of CVC Water for Irrigation Would Increase Salt Levels to a Point of Substantial Degradation.** Most of Arvin-Edison is indicated to be in a closed groundwater basin, thus salts tend to accumulate in the groundwater. Direct use of CVC Canal water for irrigation in Arvin-Edison would result in a three-fold concentration of salts in the applied water. From irrigation with CVC water, deep percolation beneath Arvin-Edison could have TDS concentrations of about 500 mg/l, and boron concentrations of about 0.5 mg/l. In stark contrast, for irrigation

with FKC water, deep percolation has TDS concentrations of 66 mg/l and boron concentrations probably less than 0.1 mg/l. "Thus there would be substantial degradation compared to the quality of the deep percolation when FKC water has been used for irrigation." (Schmidt Report, pp. 5-6 (emphasis added).) Thus, the EA's conclusion of no significant adverse impacts to water quality as a result of the proposed program is incorrect, and an anti-degradation evaluation for the proposed Program and cumulative projects analysis should be completed. (*Id.*, p. 6.)

5. **The EA's Cumulative Effects Discussion Failed to Consider Water Quality Impacts to Arvin-Edison's Intake Canal Water from Other Similar Projects.** The EA's cumulative effects discussion (EA, § 3.9, pp. 21-22) should have but did not address the potential cumulative impact of possible projects on the chemical quality of canal water at Arvin-Edison's Intake Canal (Arvin-Edison's turnout from the FKC). Other projects that could deliver lower quality CVC Canal water through the Intertie to the Friant-Kern Canal and thereby reduce delivery of higher quality FKC water to Arvin-Edison should be discussed and impacts considered. Other known and foreseeable projects are more particularly discussed in Dr. Schmidt's Report, but they include projects that pump groundwater into the CVC and the legislatively mandated recirculation program which is part of the San Joaquin River Settlement and Restoration project. Such a cumulative evaluation would need to consider (among other things) projections of well water quality near the end of recovery cycles for various water banking projects. (Schmidt Report, pp. 6-7.)

6. **The EA Failed to Adequately Address Impacts of Degradation of Water Quality on Arvin-Edison.** In conclusion, the EA did not adequately address the impacts of degradation in the chemical quality of water delivered to Arvin-Edison's Intake Canal or the resulting degradation of the groundwater beneath the District. The EA erroneously assumed that either there were no differences in the quality of water supplied to the District from various other sources, or that Title 22 drinking water standard would be protective of irrigation use. Moreover, a meaningful cumulative evaluation of existing and foreseeable projects under worst-case conditions was not completed. Available information indicates that cumulative impacts would be substantial without implementation of appropriate mitigation measures. (Schmidt Report, p. 7.)

The EA/FONSI Do Not Comply with NEPA

Based on the comments above, it would appear that the EA is deficient and it is not appropriate for Reclamation to issue a FONSI. Rather, in addition to some beneficial impacts for DEID and Rosedale, the proposed Program (and similar actions) may cause significant water quality impacts (direct, indirect, and cumulative) which were ignored or overlooked and not properly analyzed. These impacts could adversely affect public health, are proximate to prime farmlands, highly controversial, pose risks and uncertainty unique to Arvin-Edison, bear relationship to other similar projects using the CVC, threaten a violation of State law or policy (e.g. California antidegradation policy and Arvin-Edison contract rights), and are without precedent.

As previously mentioned, this proposed Program is truly without precedent and has the potential to cause significant water quality impacts for several

reasons. First, this banking program would be the first use of the newly constructed Cross Valley Canal/Friant-Kern Canal Intertie (Intertie), for purposes other than those evaluated under the Intertie CEQA/NEPA conducted as a part of the Intertie construction. The use of the Intertie has not been previously approved for programs such as these *because* of the potential water quality impacts to Arvin-Edison. In this regard, Article 9 of the Contract among Kern County Water Agency and Various Parties (including Arvin-Edison and Rosedale) for Operation of the Cross Valley Canal, Extension and Intertie provides, in part, that: "Use of the [CVC] Intertie for delivery of water from the Cross Valley Canal to the Friant-Kern Canal may result in adverse water quality impacts to Arvin-Edison. Due consideration for such impacts shall be negotiated between those Participants desiring to introduce water into the Friant-Kern Canal and Arvin-Edison..." The potential water quality impacts, while primarily unique to Arvin-Edison due to the proximity of its Intake Canal to the CVC Intertie and prime farmlands, could also be spread to other districts using the FKC by use of reverse flow facilities mentioned in the EA, and the potential impacts involve significant risks that need to be studied through a comprehensive quantitative analysis. (*See Klammath-Siskiyou Wildlands Center v. BLM,* 387 F.3d 989, 995 (9th Cir.2004) (problem with cumulative effects tables is that they do not provide objective quantification of the impacts).) However, the EA fails to provide any quantitative analysis to determine the impacts on Arvin-Edison, including water quality and agriculture, from being forced to exchange FKC water for CVC water. Indeed, the EA does not even include data regarding the water quality differences between CVC and FKC water. Rather, the EA blindly assumes, without analysis, that Reclamation's non-project water Policy and/or Title 22 will provide adequate protection to Arvin-Edison and others. This is an erroneous assumption. As Dr. Schmidt explained, neither monitoring, the Policy nor Title 22 protects water quality for irrigation uses in Arvin-Edison. (Schmidt Report, pp. 2-3.) Moreover, the Policy assumes that CVC water has the same chemistry as FKC water to justify no testing requirement. As Dr. Schmidt also explains, this too is an erroneous assumption. (Schmidt Report, p. 3.) The chemical composition of the waters are quite different and, importantly, replacement of FKC water with CVC water may well lead to substantial degradation in Arvin-Edison due to many undesirable constituents of concern, including excessive levels of sodium, chloride, boron, pH and bicarbonate, which may accumulate in the groundwater basin in Arvin-Edison. (Schmidt Report, pp. 3-6.)

Secondly, the proposed Program is among the first of those contemplated under the San Joaquin River Restoration Settlement and Restoration Project and, as such, will set a precedent for all subsequent programs that follows.

Thirdly, the Intertie point of discharge into the FKC (for water proposed to be returned to DEID) is less than 100 feet upstream of Arvin-Edison's turnout, and as Arvin-Edison is the last contractor on the FKC, the discharges into the FKC at the Intertie location would effectively cause a substitution of Arvin-Edison's water supply, with a much poorer quality water, and to be provided to Arvin-Edison from a source different than that provided under its long-term contract with Reclamation, and without Arvin-Edison's consent. We know of no other circumstance where Reclamation has engaged in this type of activity without consent of the affected contractors.

Finally, as Dr. Schmidt observed (Schmidt Report, pp. 6-7), the EA does not include a proper analysis of cumulative effects on water quality from the proposed Program in combination with other similar existing and reasonably foreseeable projects. The short cumulative effects section of the EA (§ 3.9, pp. 21-22) mentions two (2) other projects in the vicinity of the proposed Program. However, unlike the proposed Program, neither of those projects discharge CVC water through the Intertie near Arvin-Edison's turnout. Even more important, however, is the fact that the EA refers to "groundwater levels," "air quality," and other topics, but does not refer to water quality and contains absolutely no cumulative analysis of water quality impacts and consequently is in violation of NEPA. A cumulative analysis "must be more than perfunctory; it must provide 'a useful analysis of the cumulative impacts of past, present, and future projects.' (*Kern v. U.S. Bureau of Land Management,* 284 F.3d at 1062, 1075 (9th Cir. 2002) (quoting *Muckleshoot Indian Tribe v. United States Forest Serv.,* 177 F.3d 800, 810 (9th Cir.1999))." (*Ocean Advocates v. U.S. Army Corps of Engineers*, 402 F.3d 846, 868 (9th Cir. 2005).) As Dr. Schmidt recommends, the cumulative evaluation should be done assuming the replacement of FKC water with CVC water in the various potential amounts, such as 20,000, 40,000 and 60,000 acre-feet in any given year. (Schmidt, p. 7.)

Conclusion

As provided above, Arvin-Edison believes that the comment period for a project like the proposed Program has been unduly short, and we hope that our comments have not suffered as a result. Nevertheless, without waiving our right to challenge the short comment period as improper in any future proceeding, for the reasons stated above and provided in the attached appendix and the enclosed Schmidt Report, it would appear that the Reclamation should have prepared an EIS for the Program instead of an EA and FONSI. Clearly, as Dr. Schmidt concluded, the water quality degradation and associated impacts to groundwater and prime farmlands in Arvin-Edison *may* be substantial in light of the close proximity of Program deliveries of CVC water to Arvin-Edison's Intake Canal. (*E.g.,* Schmidt Report, p. 7.) Moreover, as Dr. Schmidt also pointed out, the EA is not accurate, lacks sufficient analysis and is otherwise deficient. Among other deficiencies, the EA contains no data or quantitative analysis of potential impacts on Arvin-Edison's water quality. In short, the EA fails to take a critical evaluation or "hard look" at potential water quality impacts of the proposed Program, or cumulative impacts, as required by NEPA. Thus, the EA needs to be corrected and re-circulated for additional public comment, and for an appropriate comment period, before Reclamation considers whether or not to approve the Program as currently proposed or with modifications that will ensure Arvin-Edison is not adversely impacted. Finally, regardless of whether an EIS or only an EA is completed, it appears obvious that mitigation needs to be incorporated into the Program that will ensure Arvin-Edison's water quality is not adversely affected. (*See,* Schmidt Report, p. 7.) As explained by groundwater quality expert Dr. Kenneth D. Schmidt, neither monitoring, Reclamation's Policy for non-project water nor Title 22 provides adequate protection for irrigation or other uses in Arvin-Edison. (*Id.*, pp. 2-3.)

If you have any question about these comments, wish to review any of the documents referenced above pertaining to water quality, or otherwise wish to discuss this matter further please do not hesitate to contact me.

Sincerely,

Steve Collup
Engineer-Manager

Enclosures (Schmidt Report; September 30, 2009 letter to Friant Water Authority; October 23, 2009 letter to Reclamation; and Map of Canal Interconnections)

cc: Ernest Conant, Esq.
Arvin-Edison WSD

APPENDIX TO ARVIN-EDISON WATER STORAGE DISTRICT COMMENTS ON EA AND FONSI FOR DELANO-EARLIMART IRRIGATION DISTRICT AND ROSEDALE-RIO BRAVO WATER STORAGE DISTRICT BANKING PROGRAM

A. Draft Finding of No Significant Impact ("FONSI")

Introduction

With reference to the first paragraph on page 1 of the FONSI, as explained in the attached comment letter, Arvin-Edison Water Storage District ("Arvin-Edison" or "District") does NOT agree that Reclamation's approval of the proposed water banking Program between Rosedale Rio-Bravo Water Storage District ("RRBWSD" or "Rosedale") and Delano-Earlimart Irrigation District ("Program" or "Proposed Action") is "not a major federal action that would significantly affect the quality of the human environment and an environmental impact statement ('EIS') is not required." While it *may* be appropriate to approve the Program without an EIS consistent with NEPA, with appropriate water quality mitigation incorporated into and made part of the Program, a FONSI is clearly not appropriate based on the deficient water quality analysis and other deficiencies in the EA.

Background

We understand that DEID will pursuant to the proposed Program deliver CVP and 215 Water to RRBWSD on a 2 for 1 basis. That is, for every 2 acre-feet of Friant-Kern Water (for example) DEID banks in RRBWSD, DEID will receive 1 acre-foot in return. The EA further clarifies that the 1 acre-foot of leave behind water will be 215 supplies not subject the Reclamation Law land ownership provisions. The EA does not explain however how the program will be administered so that DEID's return water will be guaranteed. In other words, will 215 water be banked before a like amount of contract water is banked so as not to strand contract supplies?

Findings
Water Resources

Regarding water quality findings discussed on pages 1 and 2, it is unclear whether Program water returned to DEID through the Cross Valley Canal ("CVC") intertie, and discharged only 100 feet upstream of Arvin-Edison's turnout/intake canal, will also be required to meet Title 22 standards, the *Policy for Accepting Non-Project Water into the Friant-Kern and Madera Canals (Policy),* (see Appendix A), or both." This needs to be clarified. In either case, as provided in the attached comment letter and in the enclosed report of Dr. Kenneth D. Schmidt, neither Title 22 nor the Policy ensures that such Non-Project CVC water is of sufficient quality for irrigation uses in Arvin-Edison or that significant water quality impacts to Arvin-Edison will not be caused by the Program. Thus, the analysis of water quality impacts of the Program is incomplete, deficient and does not support a finding of no significant impact.

Land Use

On page 2, the reference to "NKWSD" appears to be a typo.

Cumulative Impacts

Regarding pages 3-4 of the FONSI, as explained in the attached comment letter and below, the EA does not include anything more than a superficial analysis of water quality impacts on a cumulative basis, including such impacts on Arvin-Edison's water supplies which may be directly or indirectly impacted in a significant way by the Program. While the FONSI indicates that impacts of "other similar current and proposed actions" were considered, the EA does not describe relevant current or proposed actions and does not include any cumulative analysis of such actions with respect to water quality impacts.

B. Draft Environmental Assessment ("EA")

Section 1 Purchase and Need for Action
Section 1.1 Background

Delano-Earlimart Irrigation District

At page 1, the EA states that:

"In 1993, DEID purchased and developed an 80-acre parcel specifically used as a groundwater recharge basin. However, the district does not own or operate any groundwater banking or extraction facilities."

The above statements appear to be contradictory. The EA should clarify whether DEID does or does not own land that is or may be used for groundwater recharge, banking or extraction.

Section 1.2 Purpose and Need

At pages 1-2, the EA fails to point out that Reclamation has not developed any rules for banking programs, e.g., use of CVP water for the purpose of groundwater banking outside of a contractor's service area. Such rules will necessarily have to address avoidance or mitigation of potentially significant impacts of moving water beyond a contractor's turnout and associated water quality impacts. One Friant water contractor should not be allowed to bank water outside its service area if doing so is going to result in unmitigated or uncompensated significant water quality impacts to another contractor. As provided below and in the attached comment letter, Arvin-Edison is not protected by simply requiring water conveyed in the Friant-Kern Canal as part of a banking program to meet Title 22 drinking water standards or other water quality requirements which do not provide water quality protection for irrigation or agricultural uses.

Section 1.3 Scope

At page 2, the EA states that agencies other than DEID and RRBWSD could be involved in the Proposed Action as possible exchange partners. There has been no discussion with Arvin-Edison as a possible exchange partner. Moreover, there is no analysis of the related water quality or other impacts. Will those impacts be addressed in separate environmental documents? Please also clarify all water supplies that might be transferred or conveyed as a part of the proposed Program, and for which this EA is part of the approval process. For example, will 215 water be transferred and conveyed as a part of the proposed Program? Any other supplies?

In addition, we assume any approval of the proposed Program will only be effective through 2026, notwithstanding that DEID's Friant contract may in the future be converted to a perpetual 9D contract and thus the current DEID contract may terminate before 2026.

Section 1.4.3 Water Quality Standards

At page 3, the EA states that "Water quality and monitoring requirements are established annually by Reclamation and are instituted to protect water quality in Federal facilities by ensuring that imported (including non-CVP) water does not impair existing uses or negatively impact existing water quality conditions. These standards are updated periodically. The water quality standards are the maximum concentration of certain contaminants that may occur in each imported sources of water. The water quality standards for imported water to be stored and conveyed in Federal facilities are currently those set out in Title 22 of the California Code of Regulations, which Reclamation has adopted and incorporated into their water quality monitoring requirements, *Policy for Accepting Non-Project Water into the Friant-Kern and Madera Canals,* (see Appendix A)."

The above discusses water quality "requirements" and "standards." Are these the same or are they different? Furthermore, while the EA suggests there are requirements or standards that will ensure imported (including non-CVP) water does not impair existing uses or negatively impact existing water quality conditions, the EA only references Title 22 drinking water standards and the Policy for Accepting Non-Project Water into the Friant-Kern and Madera Canals (which only requires Type A non-project water to meet Title 22 standards). It is not clear, and there is no analysis of, how either of these will ensure that Program water deliveries just upstream of AEWSD's intake (even if the water meets Title 22) will not impair existing irrigation uses or negatively impact existing water quality conditions for agriculture and other purposes in AEWSD. Indeed, as provided in his enclosed report and discussed in this comment letter, Title 22 drinking water standards are not criteria for irrigation water quality suitability and the opinion of water quality expert, Dr. Kenneth D. Schmidt, is that the Program could significantly degrade AEWSD's water quality.

Section 2 Alternatives Including the Proposed Action

2.1 Alternative A: No Action

At page 5, the EA should add that, in contrast to the Proposed Action, water quality in the Friant-Kern Canal above Arvin-Edison's intake will be maintained and not be degraded as a result of the no action alternative.

2.2 Alternative B: Proposed Action

At page 5, the Proposed Action is described as returning up to 10,000 af/y, "not to exceed 20 cubic-feet per second (cfs) *without mutual consent*, to DEID upon request. Without mutual consent by whom? Would this require Reclamation or Arvin-Edison's consent. Further, if the requisite mutual request were obtained, would there be further environmental review of potential impacts to Arvin-Edison before there were any increased amount of flow were allowed to be delivered through the CVC intertie into the FKC?

At page 6, the EA discusses potential return of DEID banked water via the Cross Valley Canal and into the Friant-Kern Canal, but fails to mention that since 2006 there has been an important Agreement in effect between Kern County Water Agency and various participant parties, including Arvin-Edison and Rosedale, for the Operation of the Cross Valley Canal, Extension and Intertie. Article 9 of the Agreement provides, in effect, that use of the Intertie for delivery of water from the Cross Valley Canal to the Friant-Kern Canal requires Arvin-Edison's prior approval based on the recognition that such use may result in adverse water quality impacts to Arvin-Edison due to the close proximity of the CVC Intertie to Arvin-Edison's intake canal for receipt of Friant-Kern Water. The EA and Reclamation's approval, if any, should recognize that operation of the Program to deliver water into the Friant-Kern Canal from the CVC is also subject to prior approval which has not yet been given. Furthermore, we understand that the proposed Program may also provide for a point of delivery into the Arvin-Edison Canal for delivery into the CVC and subsequently to Rosedale. This point of delivery would also require approval from Arvin-Edison, which is may not provide if such activity would be harmful to Arvin-Edison's interests.

Also on page 6, the EA indicates that DEID's banked supplies may be pumped into the CVC then into the Friant-Kern Canal through an operational exchange facilitated by the Friant Water Users Authority ("FWA") with Arvin-Edison and/or other Friant-Kern Canal water users. To our knowledge, the FWA Board of Directors has not adopted a policy regarding such operational exchanges, Arvin-Edison has not been consulted regarding the same, and an exchange agreement would be required before such operational exchanges could occur.

3.1.1 Affected Environment

3.1.1.1 Friant Division CVP Contractors

Arvin-Edison Water Storage District

On page 7, the EA suggests that Arvin-Edison only uses 3 individual spreading basins to recharge water. The EA should be revised to clarify that Arvin-Edison recharges water in five (5) separate spreading basin areas.

On the same page, the EA refers to Arvin-Edison's exchanges of CVP water with CVC contractors. The reference implies Arvin-Edison exchanges about 71,000 acre-feet per year of FKC water. A review of the last 5 years indicates Arvin-Edison exchanges less than 20,000 acre-feet per year and only 2/3 of that amount is for CVC water.

In addition, Arvin-Edison also has a water banking program with Metropolitan Water District of Southern California, the largest M&I users, whereby it banks and then returns supplies for M&I use. This should be mentioned and taken into consideration the EA.

Delano-Earlimart Irrigation District

On page 7, the EA states that DEID's Class 2 is for 574,500 af/y. We assume that this is a typo and DEID's Class 2 amount is much less.

3.1.1.4 Conveyance Facilities and Rivers

Cross Valley Canal

On page 10, the EA should mention that Arvin-Edison is a participant in the CVC, and that use of the CVC Intertie is subject to an Agreement (referenced above) that requires, because of potential water quality impacts to Arvin-Edison, prior approval of Arvin-Edison before CVC water is delivered to through the Intertie to the Friant-Kern Canal which is only about 100 feet above Arvin-Edison's Intake Canal turnout.

Friant-Kern Canal

On page 10, the EA should mention that Arvin-Edison relies heavily on good quality water conveyed in the FKC, which must not be degraded by Program activities.

3.1.2 Environmental Consequences

3.1.2.1 No Action

At page 10, the EA should add that, in contrast to the Proposed Action, water quality in the Friant-Kern Canal above Arvin-Edison's Intake Canal will be maintained and not be degraded as a result of the no-action alternative.

On the same page, the EA should clarify that, without the proposed Program, good quality Friant water that is proposed to be banked in Rosedale as part of the proposed Program would instead continue to be delivered to Friant contractors including Arvin-Edison.

3.1.2.2 Proposed Action

On page 11, the EA concludes that "there would be no significant adverse impacts to water quality as a result of the Proposed Action." This conclusory statement is not supported by adequate water quality analysis. Among other things, there is no data regarding the water quality of the groundwater that will be pumped by Rosedale and returned through the CVC Intertie into the Friant-Kern Canal; the water quality of CVC water; or the water quality in the Friant-Kern Canal near Arvin-Edison's Intake Canal. Moreover, there is not adequate analysis regarding whether the quality of water returned through the CVC Intertie to the Friant-Kern Canal just above Arvin-Edison's Intake Canal will degrade water quality in Arvin-Edison or adversely affect use for irrigation or other purposes in Arvin-Edison. The EA's water quality conclusion seems to be based partially or wholly on the faulty assumption that Title 22 drinking water standards and/or Reclamations Non-Project Water Policy (EA, Appendix A) are sufficient to ensure there will not be significant water quality impacts to agricultural uses which is not the case. The enclosed report by Dr. Kenneth D. Schmidt further elaborates on the deficiencies of the EA with respect to its water quality deficiencies and flawed conclusions.

3.2 Land Use

3.2.1 Affected Environment

On page 12, the EA should include an evaluation of impacts to land use, e.g., agriculture, in Arvin-Edison as a result of worse quality of water that may be returned to the Friant-Kern Canal as part of the proposed Program.

3.2.2 Environmental Consequences

3.2.2.2 Proposed Action

On page 13, the EA refers to NKWSD which, presumably, is a typographical error.

See also, comment above on section 3.2.1.

3.8 Air Quality

3.8.2 Environmental Consequences

3.8.2.1 No Action

On page 20, the EA's reference to "NKWSD" appears to be incorrect. We assume the EA meant to state "RRBWSD."

3.9 Cumulative Effects

The cumulative impact section is only about one page long. Significantly, it does not appear to contain any water quality analysis necessary to determine whether the impact on the environment resulting from the incremental impact of the proposed Action -- when added to other past, present and reasonably foreseeable future actions -- may result in significant water quality or land use impacts to Arvin-Edison over time including, but not limited to, because of salt buildup as DEID and others continue to export high quality Friant-Kern Canal water in exchange for delivery of worse quality supplies just above Arvin-Edison's Intake Canal.

On page 21, the EA mentions 2 so-called "similar projects currently taking place within the vicinity of the Proposed Action." However, so far as potential water quality and related impacts on Arvin-Edison are concerned, those projects are not similar because they do not discharge water through the CVC Intertie into the Friant-Kern Canal in close proximity to Arvin-Edison's Intake Canal like the proposed Action.

Other existing and foreseeable projects that use the CVC Intertie should be considered, including those described in the enclosed report of Dr. Kenneth D. Schmidt.

Appendix A – Policy for Accepting Non-Project Water Into the Friant-Kern and Madera Canals, Water Quality Monitoring Requirements, March 7, 2008

To our knowledge, the above-referenced Policy for Accepting Non-Project Water into the Friant-Kern and Madera Canals ("Policy") has not been reviewed or commented on by Arvin-Edison or the other Friant-Canal water users, or approved by FWA Board of Directors. Thus, the Policy may violate the Administrative Procedures Act (5 USC 701 *et seq.*).

In addition, is unclear from the EA whether water delivered through the CVC Intertie into the Friant-Kern Canal near Arvin-Edison's Intake Canal will have to meet Title 22 requirements or the requirements of the Policy for Non-project water depending on water type. This is not clear because the Policy classifies three types of non-project water, Type A, B and C, but it would appear that only Type A must meet Title 22. Type B has to generally comply with Title 22, but may exceed Title 22 for certain constituents on concern as determined by Reclamation and FWA on a case-by-case basis. Type C apparently does not have to meet any water quality standards. How will the non-project

water delivered to the CVC Intertie into the Friant-Kern Canal be classified? Will it be Type A, B and/or C? If Type B or Type C, will the water be required to meet Title 22 without exception? If there are exceptions, what are they? Although Arvin-Edison believes that Title 22 does not ensure water is of a quality suitable for irrigation uses, it is still important to know whether such water will meet Title 22 as Arvin-Edison banks and returns water for Metropolitan Water District of Southern California, the State's largest M&I user of water.

Furthermore, the Policy does not appear to protect Arvin-Edison from significant water quality impacts to irrigation uses resulting from the proposed Program. The Policy states that its monitoring requirements "are intended to ensure that water quality is protected and that domestic and agricultural water users are not adversely impacted by the introduction of non-project water." However, the Policy does not appear to do that at least in so far as Arvin-Edison is concerned. The Policy contains no water quality requirements intended to ensure adequate water quality protection for irrigation uses. Further, as provided in the enclosed report of Dr. Kenneth D. Schmidt, Title 22 drinking water requirements do not ensure water quality is of sufficient quality for irrigation uses in Arvin-Edison. Moreover, Type B water does not have to meet all Title 22 requirements. Finally, Type C water is not required to meet any water quality requirements as it is said to be "physically the same as Project water." However, this is a misstatement because CVC water does not originate from Millerton Lake and is not chemically the same as Friant-Kern water. As you know, Arvin-Edison has a contract with Reclamation which provides that Reclamation will make water available for delivery from Millerton Lake and the Friant-Kern Canal, which is of very high quality. However, it would appear that the proposed Program may, in effect, deliver Arvin-Edison's high quality Friant-Kern Canal water to DEID in exchange for Arvin-Edison receiving significantly lesser quality water that could result in significant adverse impacts on water uses in Arvin-Edison including irrigation. This is simply not acceptable.

Appendix B – September 1, 2009 Agreement between FWA and DEID

The agreement attached as Appendix B is confusing in that it refers to previously banked CVP water as "Project water," whereas that "Project Water" is defined differently in the Friant Division Long-Term Renewal Contracts.

The agreement implies the FWA has the power to approve exchanges of Project Water, as defined in said Friant contracts, for other types of water. Arvin-Edison does not believe that is correct. Arvin-Edison has not consented to any such exchanges. Furthermore, to our knowledge, the FWA Board of Directors has not approved the agreement.

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS
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BAKERSFIELD, CALIFORNIA 93308
TELEPHONE (661) 392-1630

November 5, 2009

Mr. Steve Collup
Engineer-Manager
Arvin-Edison Water Storage District
20401 Bear Mountain Boulevard
Arvin, CA 93203

Re: Arvin-Edison WSD and Draft EA for Proposed DEID and RRBWSD Banking Program

Dear Steve:

Pursuant to your request, I have reviewed the U.S. Bureau of Reclamation (Reclamation) Draft Environmental Assessment (DEA) for the proposed Delano-Earlimart Irrigation District (DEID) and Rosedale-Rio Bravo Water Storage District (RRBWSD) banking program (2009-2026). In addition, I reviewed the Reclamation "Policy for Accepting Non-Project Water into the Friant-Kern and Madera Canals" (March 2008), and the "Delano-Earlimart Irrigation District's Water Banking Program with Rosedale-Rio Bravo Water Storage District, Negative Declaration" (July 2009).

Ken Schmidt Relevant Experience

As you are aware, I have periodically worked on groundwater conditions in the Arvin-Edison WSD (AEWSD or District) since December 1964. Included were about two and a half years with Bookman-Edmonston Engineering during 1964-67 on development of the first two District spreading works and District well fields and evaluation of land subsidence and groundwater quality. In 1969, I completed a M.S. thesis at the University of Arizona on boron in groundwater of the Arvin-Caliente Creek area. Since the 1970's, I have worked on several groundwater quality evaluations for the District, and on the development of additional spreading basins and District wells. I have also evaluated the effects of importing other sources of water than Friant water into the District on groundwater quality.

I am also very familiar with groundwater conditions in the RRBWSD and the various water-banking projects in the Kern Fan area. During 1989-90, I conducted the hydrogeologic part of the West Bakersfield (which included much of the RRBWSD) groundwater quality

evaluation by California State University, Fresno. I have been retained by the Kern County Water Agency (KCWA) to oversee, review, and interpret the results of groundwater monitoring for water banking projects on the Kern Fan for the past 14 years. Our firm has also worked on development of a number of new public water supply wells in the area north of the Kern River for Vaughn Water Co. and the City of Bakersfield. We have also worked on some of the ID-4 Allen Road wells that are located in the RRBWSD. A resume of my professional experience is attached.

Following are my opinions on the groundwater quality aspects of the proposed program.

Reclamation March 2008 Policy for Accepting Non-Project Water into Friant-Kern and Madera Canals

The first page of the March 2008 Policy document states that "The monitoring requirements contained herein are intended to ensure that water quality is protected and that domestic and agricultural water users are not adversely impacted by the introduction of non-project water". Monitoring alone doesn't ensure this. The water quality monitoring proposed for Type A Non-Project Water on Page 1 requires "Complete compliance with California drinking water standards (Title 22)". Attachment A provides an updated (August 13, 2009) version of these standards. These standards do not cover water quality criteria for irrigation suitability. Some of the important constituents for irrigation use of water are boron, sodium, bicarbonate, chloride, pH, and sodium adsorption ratio. Although the secondary standards (Table 6449-B of Attachment A) mention monitoring of the pH, no standard or maximum contaminant level (MCL) was provided. Earlier versions of the CDPH (formerly the DOHS) secondary standards for public water supplies in California included a recommended range for pH of 6.5 to 8.5. This is often considered the normal pH range for water supplies. Sodium and bicarbonate are also to be monitored (page 123 of Attachment A), but no MCLs were included. Sodium adsorption ratio wasn't mentioned in the Title 22 Standards.

Boron was included in Table 2b (unregulated chemicals) of the Policy. The notification level (1 mg/l) and response level (10 mg/l) are not applicable to irrigation of boron-sensitive or other crops. Irrigation water quality criteria are provided in Attachment B. It has been well known for decades that boron can be a problem with boron-sensitive crops at concentrations as low as 0.5 mg/l in the irrigation water. Boron concentrations in well water in AEWSD have been of concern since at least the late 1920's. Paul

Bailey, Consulting Engineer, prepared a report in January 1945 for the AEWSD on the occurrence of boron in the underground water of the District. Boron problems were indicated to be important. He indicated that replenishment of high boron groundwater with low boron water could mitigate the high concentrations. One of the greatest benefits of Friant water to the District, besides the amount and low salinity of the water, is the very low boron concentrations that are usually present (0.05 mg/l or less).

In summary, monitoring requirements alone don't ensure protection of the water for use. The Reclamation monitoring requirements and Title 22 Standards generally are not protective of the water quality for irrigation use.

Type C Non-Project Water

The second page of the March 2008 Policy contains a discussion of "Type C" non-project water. The last sentence states "No water quality analyses are required to convey Type C water through the Friant-Kern or Madera Canals because it is physically the same as project water." The important issue relevant to the AEWSD is whether or not the water is chemically the same. The water pumped from the Cross Valley Canal (CVC) into the lower Friant-Kern Canal is not chemically the same as water from Friant, as will be subsequently shown in this report.

State Antidegradation Policy

Since 1968, the State Water Resources Control Board (Resolution 68-11) has an antidegradation policy in effect (Attachment C). Item 1, page 1 of this resolution states: "Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies became effective, such existing high quality will be maintained, until it has been demonstrated to the state that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial uses of such water and will not result in water quality less than prescribed in the policies." During the past decade, the California Regional Water Quality Control Board, Central California Region has continued to implement this policy in a number of cases with which I am familiar.

The AEWSD has collected a number of water samples at the Intake Canal, both when Friant water and non-Friant water were being delivered. The results of this sampling weren't discussed in the DEA. Table 1 shows a summary of the chemical quality of Friant Water at the AEWSD Intake Canal. Table 2 shows the chemical qual-

ity of non-Friant CVC water at the Intake Canal. The quality of non-Friant water in the CVC depends on whether most of this water is from the California Aqueduct or recovery well pumpage for water-banking projects. Groundwater has also periodically been pumped into the Aqueduct upstream of the CVC turnout at Tupman (i.e., from wells in the Westlands WD), and this has affected the quality of water in the CVC. Total dissolved solids (TDS) concentrations of the Friant water at the AEWSD Intake Canal averaged 22 mg/l during 2003-09. The lowest TDS concentrations in the non-Friant CVC water at the AEWSD Intake Canal normally ranged from about 140 to 180 mg/l during 2003-07, whereas the highest TDS concentrations ranged from about 250 to 300 mg/l. The boron concentrations in the Friant water at the AEWSD Intake Canal were normally less than 0.05 mg/l during 2003-09. In the non-Friant CVC water at the AEWSD Intake Canal, the lowest boron concentrations were about 0.10 mg/l, and the highest were from 0.14 to 0.20 mg/l during 2003-07. Sodium concentrations in the Friant water averaged about 4 mg/l at the AEWSD Intake Canal during 2003-09. Lower sodium concentrations in the non-Friant CVC water ranged from about 24 to 31 mg/l and higher concentrations ranged from about 45 to 70 mg/l during 2003-07. Chloride concentrations in the Friant water at the AEWSD Intake Canal averaged about 2 mg/l during 2003-09. Lower chloride concentrations in the non-Friant CVC water at the AEWSD Intake Canal ranged from about 30 to 37 mg/l, and higher concentrations ranged from 70 to 107 mg/l during 2003-07. Sodium concentrations exceeding about 70 mg/l and chloride concentrations exceeding 106 mg/l can be undesirable for irrigation.

The pH levels of Friant water at the AEWSD Intake Canal usually ranged from 7.3 to 7.8 during 2003-09. The pH levels of non-Friant CVC water at the AEWSD Intake Canal usually ranged from lower values of about 8.2 to 8.5 to higher values of 9.0 to 9.3. These values have generally been higher than those in water of the California Aqueduct and are probably due to algal grown in the CVC and pumping of high pH well water into the CVC. pH levels outside of the normal range (6.5 to 8.4) can be a detriment to crop production. The pH of non-Friant CVC water at the AEWSD Intake Canal has thus usually exceeded the normal range. Bicarbonate concentrations in the Friant water at the AEWSD Intake Canal averaged 2 mg/l during 2003-07. Bicarbonate concentrations in the non-Friant CVC water at the AEWSD Intake Canal ranged from lower values of about 50 to 60 mg/l to higher values of about 80 to 110 mg/l during 2003-07. Bicarbonate concentrations exceeding about 90 mg/l are undesirable for overhead sprinkler irrigation. Nitrate concentrations in the Friant water at the AEWSD Intake Canal were usually

less than 2 mg/l during 2003-07. Nitrate concentrations in the non-Friant CVC water at the Intake Canal ranged from lower values of about 2 to 3 mg/l to higher values of about 5 to 6 mg/l during 2003-07. Nitrate concentrations as low as about 20 mg/l can be undesirable for irrigation. Table 3 compares the average values for specific constituents in the Friant water to those in the non-Friant CVC water at the AEWSD Intake Canal.

Based on a replacement of 10,000 acre-feet per year of Friant water with non-Friant CVC water, the proposed project alone would increase the average TDS concentration of water imported to AEWSD from 72 mg/l to 94 mg/l. If all of the Friant water imported to the District was replaced by non-Friant CVC water from cumulative projects, the average TDS concentration in water at the AEWSD Intake Canal could be increased to about 160 mg/l and the average boron concentration to about 0.15 mg/l.

Thus the quality of imported water at the AEWSD Intake Canal will be degraded, if more and more CVC water is used to replace Friant water. Of particular concern is when this water is directly used for irrigation in the District, such as in drought years, when water from the proposed program would be discharging into the Friant-Kern Canal. This degradation of the quality of the water supply and the associated degradation of groundwater quality in the AEWSD as a result of replacing Friant water with other water of a lesser quality violates the State antidegradation policy.

Concentration of Salts by Evapotranspiration

Most of the AEWSD is indicated to be in a closed groundwater basin. Except when some salt is removed due to recovery well pumping and export for projects such as the Metropolitan Water District water banking program, salts tend to accumulate in the groundwater because of two factors:

1. More salts are brought in with imported water than are removed.

2. Crop evapotranspiration, as part of normal irrigation practices, concentrates the salts in the applied water that appear in the deep percolation. This is because the plants use water and leave the salts behind. In AEWSD, salts in the deep percolation beneath irrigated lands are concentrated by at least three times for each irrigation cycle. Direct use of non-Friant CVC water for irrigation in the District would thus result in a three-fold concen-

tration of salts in the part of the applied water that would be percolating to the groundwater. For irrigation with the non-Friant CVC water, deep percolation beneath the District could have TDS concentrations of about 500 mg/l, and boron concentrations of about 0.5 mg/l. For irrigation with Friant water, deep percolation has TDS concentrations of 66 mg/l and boron concentrations probably less than 0.1 mg/l. Thus there would be substantial degradation compared to the quality of deep percolation when Friant water has been used for irrigation.

Thus the statement on Page 11 of the DEA that "Therefore, there would be no significant adverse impacts to water quality as a results of the Proposed Action" was not demonstrated. Therefore, an antidegradation evaluation for the proposed project and cumulative projects should be done.

Cumulative Evaluation

The Cumulative Effects discussion (Section 3.9 of the Reclamation Draft Environmental Assessment) did not address the potential cumulative impact of possible projects on the chemical quality of canal water at the AEWSD Intake Canal. Besides the proposed DEIR and RRBWSD program, other projects that could reduce Friant water deliveries and replace them with lower quality water should be discussed. In a CEQA or NEPA evaluation, worst-case situations are normally assessed (i.e., the worst drought in the period of record). Other known or foreseeable projects to evaluate include:

1. Pumping of wells into the Friant-Kern Canal.

2. The recirculation program as part of the San Joaquin River restoration project.

3. Possible pumping of wells into the California Aqueduct, such as from the Westlands WD and the Semitropic WSD water banking program.

4. Pumpage from a number of water bank recovery wells that can introduce water into the CVC near the end of prolonged recovery cycles, when the water would be expected to be of lower quality than has been observed historically.

5. Temporary disruption of aqueduct surface water supplies in the CVC and replacement with other supplies.

Such a cumulative evaluation would need to consider projections of well water quality near the end of recovery cycles for various water banking projects.

A cumulative evaluation should be done assuming the replacement of Friant water with CVC water at the AEWSD Intake Canal in the following additional amounts:

20,000 acre-feet per year
40,000 acre-feet per year
60,000 acre-feet per year.

Conclusions

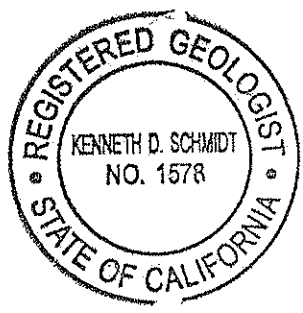
The DEA didn't adequately address the impacts of degradation in the chemical quality of water delivered to the AEWSD Intake Canal or the resulting degradation of groundwater beneath the District. The DEA assumed that either there were no differences in the quality of water supplied to the District from various other sources, or that Title 22 drinking water standards would be protective of irrigation use of the exchanged water. Most importantly, a meaningful cumulative evaluation of existing or foreseeable projects under worst-case conditions was not completed. Available information indicates that cumulative impacts would be substantial without implementation of appropriate mitigating measures.

Please call me if you have any questions.

Sincerely Yours,

Kenneth D. Schmidt
Geologist No. 1578
Certified Hydrogeologist
No. 176

KDS/pe



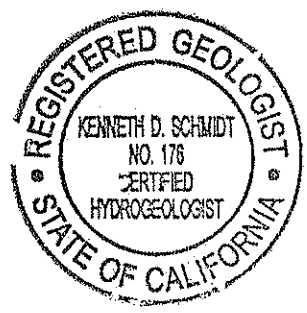


TABLE 1-CHEMICAL QUALITY OF FRIANT-KERN CANAL WATER AT AEWSD INTAKE

	Concentration (mg/l)												
Date	Calcium	Magnesium	Sodium	Bicarbonate	Chloride	Sulfate	Nitrate	pH	Electrical Cond (umhos/cm at 25°)	TDS	Hardness as $CaCO_3$	SAR	Boron
06/09/09	3	1	3	18	1	1	<0.4	7.3	25	17	8	0.4	0.02
05/07/09	3	1	4	22	4	1	<0.4	7.5	41	24	10	0.5	0.03
03/07/09	5	1	4	26	3	1	<0.4	7.8	52	27	16	0.5	0.04
04/10/07	6	1	7	31	3	4	1.0	8.2	68	37	17	0.7	<0.1
02/08/07	3	1	3	20	2	<1	<0.4	7.7	33	19	10	0.4	<0.1
12/18/06	3	1	3	20	2	1	<0.4	7.6	34	20	10	0.5	<0.1
07/07/06	2	<1	2	17	1	<1	<0.4	8.3	20	13	6	0.3	<0.1
06/09/06	4	1	3	23	1	1	<0.4	7.3	37	21	12	0.4	<0.1
05/10/06	4	1	3	25	1	1	<0.4	7.4	43	23	13	0.4	<0.1
04/11/06	4	1	4	24	2	1	<0.4	7.7	47	24	13	0.5	<0.1
03/10/06	3	1	3	22	2	1	<0.4	7.2	39	21	10	0.5	<0.1
02/10/06	3	1	3	18	2	<1	<0.4	7.5	36	19	10	0.4	<0.1
01/09/06	5	1	5	27	2	3	<0.4	7.6	56	30	16	0.5	<0.1
12/22/05	3	1	5	22	5	2	<0.4	7.7	54	28	13	0.6	<0.1
10/11/05	3	1	2	19	1	<1	<0.4	7.7	31	17	9	0.4	<0.1
09/09/05	5	1	4	27	1	2	<0.4	7.4	50	26	15	0.4	<0.1
08/08/05	3	1	2	23	1	1	<0.4	7.7	30	19	9	0.3	<0.1
07/08/05	3	1	2	16	1	<1	<0.4	7.4	28	16	9	0.3	<0.1
06/15/05	2	<1	2	14	1	<1	<0.4	7.3	24	13	7	0.3	<0.1
05/12/05	4	1	3	24	2	<1	<0.4	7.4	39	23	12	0.4	<0.1
04/21/05	4	1	4	25	2	1	<0.4	7.5	49	24	13	0.5	<0.1
03/25/05	4	1	5	24	2	1	<0.4	7.5	49	25	13	0.5	<0.1
02/16/05	3	1	3	22	2	1	<0.1	7.5	43	22	11	0.4	<0.1
01/28/05	4	1	4	20	2	1	<0.1	7.4	45	23	12	0.5	<0.1
03/15/04	4	1	10	21	2	1	<0.1	7.4	53	30	15	1.1	<0.1
02/12/04	4	1	5	22	2	1	0.6	7.7	45	25	13	0.6	-
10/15/03	3	1	3	17	1	<1	<0.4	7.7	40	17	9	0.4	-

Analyses by BC Laboratories, Inc. of Bakersfield.

TABLE 2-CHEMICAL QUALITY OF NON-FRIANT WATER
FROM CROSS VALLEY CANAL AT AEWSD INTAKE

	Concentration (mg/l)												
Date	Calcium	Magnesium	Sodium	Bicarbonate	Chloride	Sulfate	Nitrate	pH	Electrical Cond (umhos/cm at 25°)	TDS	Hardness as $CaCO_3$	SAR	Boron
08/09/07	32	3	31	99	30	27	5	8.4	328	180	92	1.4	0.13
07/09/07	34	2	44	76	37	35	6	8.6	381	210	93	2.0	0.17
06/08/07	31	7	41	83	46	33	3	8.9	378	220	100	1.7	0.16
05/09/07	37	6	38	110	45	33	6	8.2	415	230	110	1.6	0.17
01/10/07	22	15	69	82	100	37	4	8.4	700	300	120	2.8	0.14
11/09/06	15	8	27	60	32	20	3	9.0	270	140	72	1.4	0.11
10/16/06	15	8	24	55	28	17	2	8.3	260	140	71	1.2	<0.10
11/08/05	16	11	46	71	64	26	3	8.1	400	210	84	2.2	0.13
10/18/04	30	7	40	84	47	27	3	8.7	388	209	102	1.7	0.13
07/15/04	18	11	42	77	61	27	2	8.5	388	210	90	1.9	0.13
06/14/04	14	8	33	57	46	24	2	8.5	320	161	69	1.7	0.20
05/14/04	20	10	49	64	71	38	2	9.2	464	245	104	2.1	0.17
12/13/03	27	16	72	47	107	43	2	9.3	562	321	131	2.7	0.20

Analyses by BC Laboratories, Inc. of Bakersfield.

TABLE 3-COMPARISON OF THE CHEMICAL QUALITY OF FRIANT-KERN CANAL AND NON-FRIANT CVC WATER AT AEWSD INTAKE CANAL

Constituent	Concentration (mg/l)	
	Friant-Kern Canal	Cross Valley Canal
Calcium	4	15
Magnesium	1	9
Sodium	4	32
Bicarbonate	22	62
Sulfate	1	21
Chloride	2	41
Nitrate	<0.4	3
Boron	<0.1	0.15
pH	7.6	8.5
Electrical Conductivity (micromhos/cm @ 25°C)	41	310
Total Dissolved Solids	22	163
Hardness (as $CaCO_3$)	12	76
Sodium Adsorption Ratio	0.5	1.6

Analyses by BC Laboratories, Inc. of Bakersfield.

ATTACHMENT A

TITLE 22 WATER QUALITY STANDARDS
FOR PUBLIC WATER SYSTEMS

surveys shall be repeated every five years.

Article 4. Primary Standards--Inorganic Chemicals

§64431. Maximum Contaminant Levels--Inorganic Chemicals.

(a) Public water systems shall comply with the primary MCLs in Table 64431-A as specified in this article.

Table 64431-A
Maximum Contaminant Levels
Inorganic Chemicals

Chemical	*Maximum Contaminant Level, mg/L*
Aluminum	1.
Antimony	0.006
Arsenic	0.010
Asbestos	7 MFL*
Barium	1.
Beryllium	0.004
Cadmium	0.005
Chromium	0.05
Cyanide	0.15
Fluoride	2.0
Mercury	0.002
Nickel	0.1
Nitrate (as NO3)	45.
Nitrate+Nitrite (sum as nitrogen)	10.
Nitrite (as nitrogen)	1.
Perchlorate	0.006
Selenium	0.05
Thallium	0.002

* MFL=million fibers per liter; MCL for fibers exceeding 10 um in length.

§64432. Monitoring and Compliance--Inorganic Chemicals.

(a) All public water systems shall monitor to determine compliance with the nitrate and nitrite MCLs in Table 64431-A, pursuant to subsections (c) through (e) and §64432.1. All community and nontransient-noncommunity water systems shall monitor to determine compliance with the perchlorate MCL, pursuant to subsections (c), (d), (j), and Section 64432.3. All community and nontransient-noncommunity water systems shall also monitor to determine compliance with the other MCLs in Table 64431-A, pursuant to subsections (b) through (n) and, for asbestos, Section 64432.2. Monitoring shall be conducted in the year designated by the Department of each compliance period beginning with the compliance period starting January 1, 1993.

(b) Unless directed otherwise by the Department, each community and nontransient-noncommunity water system shall initiate monitoring for an inorganic chemical within six months following the effective date of the regulation establishing the MCL for the chemical and the addition of the chemical to Table 64431-A.

(c) Unless more frequent monitoring is required pursuant to this Chapter, the frequency of monitoring for the inorganic chemicals listed in Table 64431-A, except for asbestos, nitrate/nitrite, and perchlorate, shall be as follows:

(1) Each compliance period, all community and nontransient-noncommunity systems using groundwater shall monitor once during the year designated by the Department. The Department will designate the year based on historical monitoring frequency and laboratory capacity. All community and nontransient-noncommunity systems using approved surface water shall monitor annually. All systems monitoring at distribution entry points which have combined surface and groundwater sources shall monitor annually.

(2) Quarterly samples shall be collected and analyzed for any chemical if analyses of such samples indicate a continuous or persistent trend toward higher levels of that chemical, based on an evaluation of previous data.

(d) For the purposes of Sections 64432, 64432.1, 64432.2, and 64432.3, detection shall be defined by the detection limits for purposes of reporting (DLRs) in Table 64432-A.

Table 64432-A
Detection Limits for Purposes of Reporting (DLRs) for Regulated Inorganic Chemicals

Chemical	*Detection Limit for Purposes of Reporting (DLR) (mg/L)*
Aluminum	0.05
Antimony	0.006
Arsenic	0.002
Asbestos	0.2 MFL>10um*
Barium	0.1
Beryllium	0.001
Cadmium	0.001
Chromium	0.01
Cyanide	0.1
Fluoride	0.1
Mercury	0.001
Nickel	0.01
Nitrate (as NO3)	2.
Nitrite (as nitrogen)	0.4
Perchlorate	0.004
Selenium	0.005
Thallium	0.001

Table 64442
Radionuclide Maximum Contaminant Levels (MCLs)
and Detection Levels for Purposes of Reporting (DLRs)

Radionuclide	*MCL*	*DLR*
Radium-226	5 pCi/L (combined radium-226 & -228)	1 pCi/L
Radium–228		1 pCi/L
Gross Alpha particle activity (excluding radon and uranium)	15 pCi/L	3 pCi/L
Uranium	20 pCi/L	1 pCi/L

(b) Each system shall monitor to determine compliance with the MCLs in table 64442, as follows:

(1) Monitor at each water source, or every entry point to the distribution system that is representative of all sources being used under normal operating conditions; conduct all monitoring at the same sample site(s) unless a change is approved by the Department, based on a review of the system and its historical water quality data;

(2) For quarterly monitoring, monitor during the same month (first, second or third) of each quarter during each quarter monitored;

(3) By December 31, 2007, complete initial monitoring that consists of four consecutive quarterly samples at each sampling site for each radionuclide in table 64442, except that nontransient-noncommunity water systems shall not be required to monitor radium-228 as a separate analyte, but shall monitor for compliance with the combined radium MCL using the analytical method described in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, Section 6, Alpha-emitting Radium Isotopes in Drinking Water, Method 903.0 (EPA/600/4-80-032, August 1980):

(A) Data collected for a sampling site between January 1, 2001, and December 31, 2004, may be used to satisfy the initial monitoring requirement, subject to the Department's approval based on whether the analytical methods, DLRs, sampling sites, and the frequency of monitoring used were consistent with this article.

(B) For gross alpha particle activity, uranium, radium-226 and radium-228, the Department may waive the final two quarters of initial monitoring at a sampling site if the results from the previous two quarters are below the DLR(s) and the sources are not known to be vulnerable to contamination.

(c) Any new system or new source for an existing system shall begin monitoring pursuant to Subsection (b) within the first quarter after initiating water service to the public.

(d) After initial monitoring, each system shall monitor for each radionuclide at each sampling site at a frequency determined by the monitoring result(s) [single sample result or average of sample results if more than one sample collected] from the most recent compliance period as follows:

compliance is being determined.

(A) If any sample result will cause the annual average at any sample site to exceed the MCL, the system shall be out of compliance immediately upon receiving the result;

(B) If a system has not analyzed the required number of samples, compliance shall be determined by the average of the samples collected at the site during the most recent 12 months; and

(C) If a sample result is less than the DLR in table 64442, zero shall be used to calculate the annual average, unless a gross alpha particle activity is being used in lieu of radium-226, total radium, and/or uranium. In that case, if the gross alpha particle activity result is less than the DLR, ½ the DLR shall be used to calculate the annual average.

(4) If compositing is allowed at a sampling site, by the results of a composite of four consecutive quarterly samples.

(5) If the system can provide documentation that a sample was subject to sampling or analytical errors, the Department may invalidate the result based on its review of the documentation, the sampling result, and the historical sampling data.

(6) Each system shall ensure that the laboratory analyzing its samples collected for compliance with this article calculates and reports the sample-specific Minimum Detectable Activity at the 95% confidence level (MDA_{95}) along with the sample results. The MDA_{95} shall not exceed the DLR and shall be calculated as described in ANSI N42.23 Measurement and Associated Instrumentation Quality Assurance for Radiobioassay Laboratories, Appendix A.7.6 (September 10, 1995).

§64443. MCLs and Monitoring - Beta Particle and Photon Radioactivity

(a) Each community and nontransient-noncommunity water system (system) shall comply with the primary MCLs in table 64443 and use the DLRs for reporting monitoring results:

Table 64443
Radionuclide Maximum Contaminant Levels (MCLs)
and Detection Levels for Purposes of Reporting (DLRs)

Radionuclide	*MCL*	*DLR*
Beta/photon emitters	4 millirem/year annual dose equivalent to the total body or any internal organ	Gross Beta particle activity: 4 pCi/L
Strontium-90	8 pCi/L (= 4 millirem/yr dose to bone marrow)	2 pCi/L
Tritium	20,000 pCi/L (= 4 millirem/yr dose to total body)	1,000 pCi/L

(b) Each system designated by the Department as vulnerable to contamination by nuclear facilities and/or a determination of vulnerability by a Source Water Assessment, as defined in section 63000.84, shall monitor to determine compliance with the MCLs in table 64443, as follows:

(1) Beginning within one quarter after being notified by the Department that the system is vulnerable, quarterly for beta/photon emitters and annually for tritium and strontium-90 at each water source, or every entry point to the distribution system that is representative of all

Article 5.5. Primary Standards -- Organic Chemicals

§64444. Maximum Contaminant Levels – Organic Chemicals.

The MCLs for the primary drinking water chemicals shown in Table 64444-A shall not be exceeded in the water supplied to the public.

Table 64444-A
Maximum Contaminant Levels
Organic Chemicals

Chemical	*Maximum Contaminant Level, mg/L*
(a) Volatile Organic Chemicals (VOCs)	
Benzene	0.001
Carbon Tetrachloride	0.0005
1,2-Dichlorobenzene	0.6
1,4-Dichlorobenzene	0.005
1,1-Dichloroethane	0.005
1,2-Dichloroethane	0.0005
1,1-Dichloroethylene	0.006
cis-1,2-Dichloroethylene	0.006
trans-1,2-Dichloroethylene	0.01
Dichloromethane	0.005
1,2-Dichloropropane	0.005
1,3-Dichloropropene	0.0005
Ethylbenzene	0.3
Methyl-*tert*-butyl ether	0.013
Monochlorobenzene	0.07
Styrene	0.1
1,1,2,2-Tetrachloroethane	0.001
Tetrachloroethylene	0.005
Toluene	0.15
1,2,4-Trichlorobenzene	0.005
1,1,1-Trichloroethane	0.200
1,1,2-Trichloroethane	0.005
Trichloroethylene	0.005
Trichlorofluoromethane	0.15
1,1,2-Trichloro-1,2,2-Trifluoroethane	1.2
Vinyl Chloride	0.0005
Xylenes	1.750*

Table 64444-A (continued)
Maximum Contaminant Levels
Organic Chemicals

Chemical	*Maximum Contaminant Level, mg/L*
(b) Non-Volatile Synthetic Organic Chemicals (SOCs)	
Alachlor	0.002
Atrazine	0.001
Bentazon	0.018
Benzo(a)pyrene	0.0002
Carbofuran	0.018
Chlordane	0.0001
2,4-D	0.07
Dalapon	0.2
Dibromochloropropane	0.0002
Di(2-ethylhexyl)adipate	0.4
Di(2-ethylhexyl)phthalate	0.004
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin	0.002
Ethylene Dibromide	0.00005
Glyphosate	0.7
Heptachlor	0.00001
Heptachlor Epoxide	0.00001
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Lindane	0.0002
Methoxychlor	0.03
Molinate	0.02
Oxamyl	0.05
Pentachlorophenol	0.001
Picloram	0.5
Polychlorinated Biphenyls	0.0005
Simazine	0.004
Thiobencarb	0.07
Toxaphene	0.003
2,3,7,8-TCDD (Dioxin)	3×10^{-8}
2,4,5-TP (Silvex)	0.05

*MCL is for either a single isomer or the sum of the isomers.

§64445.1. Monitoring and Compliance – Organic Chemicals.

(a) For the purposes of this article, detection shall be defined by the detection limits for purposes of reporting (DLRs) in Table 64445.1-A:

Table 64445.1-A
Detection Limits for Purposes of Reporting (DLRs)
for Regulated Organic Chemicals

Chemical	*Detection Limit for Purposes of Reporting (DLR)(mg/L)*
(a) All VOCs, except as listed	0.0005
Methyl-*tert*-butyl ether	0.003
Trichlorofluoromethane	0.005
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.01
(b) SOCs	
Alachlor	0.001
Atrazine	0.0005
Bentazon	0.002
Benzo(a)pyrene	0.0001
Carbofuran	0.005
Chlordane	0.0001
2,4-D	0.01
Dalapon	0.01
Dibromochloropropane (DBCP)	0.00001
Di(2-ethylhexyl)adipate	0.005
Di(2-ethylhexyl)phthalate	0.003
Dinoseb	0.002
Diquat	0.004
Endothall	0.045
Endrin	0.0001
Ethylene dibromide (EDB)	0.00002
Glyphosate	0.025
Heptachlor	0.00001
Heptachlor epoxide	0.00001
Hexachlorobenzene	0.0005
Hexachlorocyclopentadiene	0.001
Lindane	0.0002
Methoxychlor	0.01
Molinate	0.002
Oxamyl	0.02
Pentachlorophenol	0.0002
Picloram	0.001
Polychlorinated biphenyls (PCBs)	

Chemical	*Detection Limit for Purposes of Reporting (DLR)(mg/L)*
(as decachlorobiphenyl)	0.0005
Simazine	0.001
Thiobencarb	0.001
Toxaphene	0.001
2,3,7,8-TCDD (Dioxin)	5×10^{-9}
2,4,5-TP (Silvex)	0.001

(b) When organic chemicals are not detected pursuant to Table 64445.1-A.

(1) A water system which has not detected any of the VOCs on Table 64444-A during the initial four quarters of monitoring, shall collect and analyze one sample annually. After a minimum of three years of annual sampling with no detection of a VOC in Table 64444-A, a system using groundwater may reduce the monitoring frequency to one sample during each compliance period. A system using surface water shall continue monitoring annually.

(2) A system serving more than 3,300 persons which has not detected an SOC on Table 64444-A during the initial four quarters of monitoring shall collect a minimum of two quarterly samples for that SOC in one year during the year designated by the Department of each subsequent compliance period. The year will be designated on the basis of historical monitoring frequency and laboratory capacity.

(3) A system serving 3,300 persons or less which has not detected an SOC on Table 64444-A during the initial four quarters of monitoring shall collect a minimum of one sample for that SOC during the year designated by the Department of each subsequent compliance period. The year will be designated on the basis of historical monitoring frequency and laboratory capacity.

(c) When organic chemicals are detected pursuant to Table 64445.1-A.

(1) Prior to proceeding with the requirements of paragraphs (c)(2) through (7), the water supplier may first confirm the analytical result, as follows: Within seven days from the notification of an initial finding from a laboratory reporting the presence of one or more organic chemicals in a water sample, the water supplier shall collect one or two additional sample(s) to confirm the initial finding. Confirmation of the initial finding shall be shown by the presence of the organic chemical in either the first or second additional sample, and the detected level of the contaminant for compliance purposes shall be the average of the initial and confirmation sample(s). The initial finding shall be disregarded if two additional samples do not show the presence of the organic chemical.

(2) If one or both of the related organic chemicals heptachlor and heptachlor epoxide are detected, subsequent monitoring shall analyze for both chemicals until there has been no detection of either chemical for one compliance period.

(3) A groundwater sampling site at which one or more of the following chemicals has been detected shall be monitored quarterly for vinyl chloride: trichloroethylene, tetrachloroethylene,1,2-dichloroethane,1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene. If vinyl chloride is not detected in the first quarterly

Article 14. Treatment Techniques

§64448. Treatment Technique Requirements.

(a) A public water system which uses acrylamide and/or epichlorohydrin in drinking water treatment shall certify annually in writing to the Department that the combination of dose and monomer does not exceed the following levels:

(1) Acrylamide: 0.05% monomer in polyacrylamide dosed at 1 mg/L, or equivalent.

(2) Epichlorohydrin: 0.01% residual of epichlorohydrin dosed at 20 mg/L, or equivalent.

Article 16. Secondary Drinking Water Standards

§64449. Secondary Maximum Contaminant Levels and Compliance.

(a) The secondary MCLs shown in Tables 64449-A and 64449-B shall not be exceeded in the water supplied to the public by community water systems.

Table 64449-A
Secondary Maximum Contaminant Levels
"Consumer Acceptance Contaminant Levels"

Constituents	*Maximum Contaminant Levels/Units*
Aluminum	0.2 mg/L
Color	15 Units
Copper	1.0 mg/L
Foaming Agents (MBAS)	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Methyl-*tert*-butyl ether (MTBE)	0.005 mg/L
Odor—Threshold	3 Units
Silver	0.1 mg/L
Thiobencarb	0.001 mg/L
Turbidity	5 Units
Zinc	5.0 mg/L

Table 64449-B
Secondary Maximum Contaminant Levels
"Consumer Acceptance Contaminant Level Ranges"

	Maximum Contaminant Level Ranges		
Constituent, Units	*Recommended*	*Upper*	*Short Term*
Total Dissolved Solids, mg/L	500	1,000	1,500
or			
Specific Conductance, µS/cm	900	1,600	2,200
Chloride, mg/L	250	500	600
Sulfate, mg/L	250	500	600

(b) Each community water system shall monitor its groundwater sources or distribution system entry points representative of the effluent of source treatment every three years and its approved surface water sources or distribution system entry points representative of the effluent of source treatment annually for the following:

(1) Secondary MCLs listed in Tables 64449-A and 64449-B; and

(2) Bicarbonate, carbonate, and hydroxide alkalinity, calcium, magnesium, sodium, pH, and total hardness.

(c) If the level of any constituent in Table 64449-A exceeds an MCL, the community water system shall proceed as follows:

(1) If monitoring quarterly, determine compliance by a running annual average of four quarterly samples;

(2) If monitoring less than quarterly, initiate quarterly monitoring and determine compliance on the basis of an average of the initial sample and the next three consecutive quarterly samples collected;

(3) If a violation has occurred (average of four consecutive quarterly samples exceeds an MCL), inform the Department when reporting pursuant to Section 64451;

(4) After one year of quarterly monitoring during which all the results are below the MCL and the results do not indicate any trend toward exceeding the MCL, the system may request the Department to allow a reduced monitoring frequency.

(d) For the constituents shown on Table 64449-B, no fixed consumer acceptance contaminant level has been established.

(1) Constituent concentrations lower than the Recommended contaminant level are desirable for a higher degree of consumer acceptance.

(2) Constituent concentrations ranging to the Upper contaminant level are acceptable if it is neither reasonable nor feasible to provide more suitable waters.

Table 64533-A
Maximum Contaminant Levels and Detection Limits for Purposes of Reporting Disinfection Byproducts

Disinfection Byproduct	Maximum Contaminant Level (mg/L)	Detection Limit for Purposes of Reporting (mg/L)
Total trihalomethanes (TTHM)	0.080	
Bromodichloromethane		0.0005
Bromoform		0.0005
Chloroform		0.0005
Dibromochloromethane		0.0005
Haloacetic acids (five) (HAA5)	0.060	
Monochloroacetic Acid		0.002
Dichloroacetic Acid		0.001
Trichloroacetic Acid		0.001
Monobromoacetic Acid		0.001
Dibromoacetic Acid		0.001
Bromate	0.010	0.005
Chlorite	1.0	0.02

(b) A system installing GAC, membranes, or other technology to limit disinfectant byproducts to comply with this section may apply to the Department for an extension up to December 31, 2003. Applications for extensions shall include the results of disinfection byproduct monitoring, a description of the technology being installed and how it is expected to affect future disinfection byproduct levels, and a proposed schedule for compliance. If granted an extension, a system shall meet the schedule and interim treatment and monitoring requirements established by the Department.

(c) The best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for disinfection byproducts are identified in table 64533-B.

ATTACHMENT B

WATER QUALITY CRITERIA
FOR IRRIGATION

WATER QUALITY CRITERIA FOR IRRIGATION

Parameter	Degree of Restriction for Use			Notes
	None	Slight to Moderate	Severe	
Electrical Conductivity (micromhos/cm @ 25°C)	<700	700-3,000	>3,000	
Total Dissolved Solids (mg/l)	<450	450-2,000	>2,000	
Sodium Adsorption Ratio (SAR)	<3	3-9	>9	Surface Irrigation
Sodium (mg/l)	<69	>69	-	Sprinkler Irrigation
Chloride (mg/l)	<142	142-355	>355	Surface Irrigation
	<107	>107	-	Sprinkler Irrigation
Boron (mg/l)	<0.5	0.5-2.0	>2.0	
Bicarbonate (mg/l)	<92	92-519	>519	Overhead Sprinklers
Nitrate-Nitrogen (mg/l)	<22	22-132	>132	
pH	6.5-8.4	<6.5 & >8.4	-	

Modified from Ayers & Wescott (1985). Units were converted from milliequivalents per liter to mg/l, so as to be comparable with irrigation water analyses. The boron criteria are for crops that are not tolerant to boron.

ATTACHMENT C

STATE ANTIDEGRADATION POLICY

STATE WATER RESOURCES CONTROL BOARD

RESOLUTION NO. 68-16

STATEMENT OF POLICY WITH RESPECT TO
MAINTAINING HIGH QUALITY OF WATERS IN CALIFORNIA

WHEREAS the California Legislature has declared that it is the policy of the State that the granting of permits and licenses for unappropriated water and the disposal of wastes into the waters of the State shall be so regulated as to achieve highest water quality consistent with maximum benefit to the people of the State and shall be controlled so as to promote the peace, health, safety and welfare of the people of the State; and

WHEREAS water quality control policies have been and are being adopted for waters of the State; and

WHEREAS the quality of some waters of the State is higher than that established by the adopted policies and it is the intent and purpose of this Board that such higher quality shall be maintained to the maximum extent possible consistent with the declaration of the Legislature;

NOW, THEREFORE, BE IT RESOLVED:

1. Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.

2. Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

3. In implementing this policy, the Secretary of the Interior will be kept advised and will be provided with such information as he will need to discharge his responsibilities under the Federal Water Pollution Control Act.

BE IT FURTHER RESOLVED that a copy of this resolution be forwarded to the Secretary of the Interior as part of California's water quality control policy submission.

CERTIFICATION

The undersigned, Executive Officer of the State Water Resources Control Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on October 24, 1968.

Dated: October 28, 1968

Kerry W. Mulligan
Executive Officer
State Water Resources
Control Board

KEN SCHMIDT RESUME

KENNETH D. SCHMIDT AND ASSOCIATES
GROUNDWATER QUALITY CONSULTANTS

PROFESSIONAL EXPERIENCE
KENNETH D. SCHMIDT
JANUARY 2007

BIRTHPLACE AND DATE

Madera, California on November 8, 1942

DEGREES

B.S. Geology, Fresno State College, Fresno, California (1964)
M.S. Hydrology, University of Arizona, Tucson, Arizona (1969)
Ph.D. Hydrology, University of Arizona, Tucson, Arizona (1971)

REGISTRATION AND CERTIFICATION

Geologist No. 1578 in California (1970)
Geologist No. 23685 in Arizona (1989)
Geologist No. G462 in Oregon (1978)
Hydrogeologist No. 176 in California (1995)

SOCIETY MEMBERSHIP

American Water Resources Association (1972)
American Water Works Association (1970) (Life Member)
California Groundwater Resources Association (1996)
Geologist Society of America (2006)
Water Pollution Control Federation (1972)

PROFESSIONAL EXPERIENCE

June 1972 to Present: Principal, Kenneth D. Schmidt and Associates, Groundwater Quality Consultants, Fresno, California.

January 1969 to May 1972: Hydrologist, Harshbarger & Associates, Consultants in Hydrogeology, Tucson, Arizona.

December 1964 to February 1967: Engineering Geologist, Bookman-Edmonston Engineering, Inc., Arvin, California.

As an engineering geologist with Bookman-Edmonston Engineering, Inc. in Arvin from 1964-67, Schmidt's primary duties included hydrogeologic studies associated with the development and operation of two large-scale recharge and groundwater recovery facilities southeast of Bakersfield, California. This experience included the basic aspects of groundwater studies, including preparing a well inventory, water-level measurements, aquifer testing, logging drill cuttings, interpreting geophysical logs, observing well drilling and construction, collecting water samples for chemi-

cal analyses from hundreds of water supply wells, and data interpretation. He conducted specific studies of land surface subsidence due to groundwater overdrafting and of the occurrence of high boron contents in groundwater northeast of Arvin. Schmidt subsequently completed a Master's thesis (in the hydrology program at the University of Arizona) in 1969 on the boron problem in the Arvin area.

As a hydrologist with Harshbarger & Associates in Tucson from 1969-72, an investigation was conducted on groundwater conditions and potential groundwater development for the City of Fresno. Schmidt's interest in the presence of high nitrate contents in groundwater of the Fresno urban area resulted in the subsequent completion of a Ph.D. dissertation in 1971 (also at the University of Arizona) on that topic. Since that time, he has participated in four master plan updates for the Fresno Metro area and a comprehensive nitrate evaluation for the City of Fresno in 2006.

As the principal of his own consulting firm since 1972, Schmidt has conducted and supervised thousands of hydrogeologic investigations in the southwest, primarily in Central California. In the early 1970's, he participated in development of the Tulare Lake Basin (south part of the San Joaquin Valley) water quality basin plan. As part of this project, he developed salt budgets for sub-basins, and evaluated the distribution of chemical constituents such as nitrate and boron in groundwater, and the impacts of irrigation and waste disposal facilities on groundwater quality. In the mid-1970's, Schmidt worked on development of some of the first national guidelines for groundwater quality monitoring.

By the late 1970's, Schmidt began to design, develop, and implement some of the earliest groundwater quality monitoring programs at specific sites in California. His involvement with a number of these has continued through to the present. Although a full-time consultant, he has conducted dozens of University of California extension classes and short courses since the late 1970's, on groundwater hydraulics, groundwater quality and contamination, and monitoring. Since 1973, he has periodically taught hydrogeology classes at California State University, Fresno.

In 1980, Schmidt began working on a number of projects to develop new public-supply wells in water quality problem areas. Included have been hundreds of such wells in high salinity, nitrate, sulfate, arsenic, fluoride, iron, manganese, hydrogen sulfide, color, DBCP, EDB, and uranium areas of the San Joaquin Valley. His work in this regard for dozens of cities, water utilities, and schools has continued through to the present.

From 1985 to 1988, he was a member of the National Academy of Sciences Committee on Irrigation-Induced Water Quality Problems. The committee work focused on agricultural drainage problems, including the San Joaquin Valley. For a number of years following the inception of the U.S. Geological Survey National Water Quality Assessment Program in the mid-1980's, Schmidt was a member of a national advisory committee for that program. In 1987, he was named the Chairman of the Groundwater Sub-Committee of the Technical Advisory Committee for the San Joaquin Valley Agricultural Drainage Program. From 1992-98, Schmidt was a member of the Industrial Advisory Council in the College of Engineering at the University of Arizona. From 1993-2003 he was a member of the Department Advisory Committee that evaluated the hydrology program at the University of Arizona.

Since the mid-1990's, the firm has been a leader in groundwater resource evaluations in Central California. The firm has been involved with several large-scale recharge and water banking projects, including: the Arvin-Edison Water Storage District in Kern County, the Semitropic Water Banking Project in the Shafter-Wasco area, and the Kern Fan Water Banking Project west of Bakersfield. The firm has worked on numerous other groundwater recharge evaluations, including selections and evaluation of areas favorable for recharge, exploration, and monitoring of existing facilities. The firm has completed detailed groundwater evaluations for development of Water Management Plans in the Cities of Fresno, Tulare, Clovis, Madera, Livingston, and Dinuba. The firm has participated in numerous groundwater management plans. Ken Schmidt has also provided expert witness services for numerous litigation cases involving groundwater in the San Joaquin Valley. In recent years, the firm has conducted detailed groundwater studies associated with EIRs for numerous gravel mines in Tulare, Fresno, Madera, and Merced Counties. The firm provides consulting services to develop new water supply wells to over two dozen cities, towns, and private water companies in the San Joaquin Valley. During the 2000's, the firm designed and implemented enhanced groundwater monitoring programs at dozens of sites, including municipal WWTF, food processing sites, and dairies.

SELECTED CLIENTELE

Cities and Towns

Atwater, Public Works Department.
Bakersfield, Wastewater Division.
Cambria Community Services District.
Clovis, Public Works Department.

Corcoran, Public Works Department.
Delano, Water Division and Wastewater Division.
Dinuba, Public Works Department.
East Orosi.
Exeter, Water Division and Wastewater Division.
Fresno, Public Works Department, Water Division, and Wastewater Division.
Gustine.
Hanford, Public Works Department.
Kerman, Public Works Department.
Lemoncove.
Los Banos.
Lindsay, Public Works Department.
Madera, Public Works Department.
Mammoth CWD (Mammoth Lakes).
McFarland.
Mendota, Public Works Department.
Modesto, Public Works Department.
Newman.
Patterson.
Porterville.
Reedley, Public Works Department.
Sanger, Public Works Department.
San Joaquin, Water Department.
Santa Clara, Department of Public Works.
Sultana.
Tulare, Public Works Department.
Turlock, Public Works Department.
Wasco, Wastewater Division.
West Kern WD (Taft).
Woodlake.

Counties

County of Fresno, Departments of Public Works, Planning, and Environmental Health.
County of Madera, Department of Public Works.
County of Merced.
County of Sierra.
County of Tulare, Department of Public Works.

Engineering Firms

Blair, Church, and Flynn, Clovis.
Boyle Engineering Corporation, Fresno and Bakersfield.
Carollo Engineers, Fresno, Sacramento, and Bakersfield.
Dee Jaspar and Associates, Bakersfield.

Provost & Pritchard Engineering Group, Fresno.
Quad Knopf, Fresno, Visalia, and Bakersfield.
Stantec, Sacramento.
Stoddard and Associates, Los Banos
Yamabe and Horn Engineering, Fresno.

Farming Entities

Britz Farms, Five Points.
Five Points Ranch, Five Points.
Harris Ranch, Coalinga.
Kaweah-St. Johns Farmers League.
Newland Land Co., New Columbia Ranch, Firebaugh.
O'Neill Farming Enterprises, Five Points.
Paramount Farms, Cawelo.
R and G, Lerdo.
Red Rock Ranch, Five Points.
Starrh Farms, Shafter.
Sun World, Bakersfield.

Industries

California Portland Cement Co., Mojave and Colton.
CIBA GEIGY, Sanger.
Dole Fruit & Nut Co., Fresno.
Food Machinery Corporation, San Jose.
The Garlic Company, Lerdo.
Guardian Glass Plant, Kingsburg.
GWF Power Systems, Inc., Hanford and Kingsburg.
Holly Sugar Co., Tracy and Imperial.
Ingomar Packing Co., Los Banos.
Kenetech Alternative Power Systems, Kingsburg.
Pacific Ethanol, Madera.
Rogers Helicopters, Inc., Clovis.
Sperry New Holland, Fowler.
Spreckels Sugar Company, Manteca, Mendota, Salinas, and Woodland.
Sun-Maid Growers of California, Kingsburg.
Thermo-Electron Energy Systems, Mendota.
Ultra Power, Inc., Kern County.
Valley Perforating Co., Bakersfield.

Irrigation Districts

Angiola Water District, Corcoran.
Arvin-Edison WSD, Arvin.
Buena Vista Water Storage District, Buttonwillow.
Central California Irrigation District, Los Banos.

Columbia Canal Company, Firebaugh.
Eastside Water District, Stanislaus County.
Friant Water Users.
James Irrigation District, San Joaquin.
Kern Delta WD, Greenfield.
North Kern Water Storage District, Cawelo.
Panoche Drainage District.
San Joaquin River Exchange Contractors Authority, Los Banos.
Semitropic Water Storage District, Wasco.

Mining Companies

Artesia Ready Mix, Lemoncove.
Calavaras Materials, Fresno and Merced.
CalMat Co., Centerville.
Madera Sand & Rock, Madera.
Sonora Mining Corporation, Jamestown.
Stewart & Nuss, Fresno.

Private Water Companies

Bakman Water Co., Fresno.
Cal Water Service, Selma and Bakersfield.
East Niles CSD, Bakersfield.
McFarland Mutual Water Co.
Oildale Mutual Water Co., Bakersfield.
Vaughn Water Co., Bakersfield.
West Kern Water District, Taft.

Special Districts

Monterey County Flood Control and Water Conservation District, Salinas.
Monterey Peninsula Water Management District, Monterey.
Selma-Kingsburg-Fowler County Sanitation District, Kingsburg.
Sierra Valley Groundwater Management District, Loyalton.

Publications

"The Use of Chemical Hydrographs in Groundwater Quality Studies," in Hydrology and Water Resources in Arizona and the Southwest, vol. 1, Arizona Section AWRA, pp 211-223, 1971.
"Nitrate in Groundwater of the Fresno-Clovis Metropolitan Area, California," Ground Water, vol, 10, No. 1, pp 50-64, 1972.

"Groundwater Contamination in the Cortaro Area, Pima County,

Arizona," in Hydrology and Water Resources in Arizona and the Southwest, vol. 2, Arizona Section AWRA, pp 95-111, 1972.

"Groundwater Quality in the Cortaro Area Northwest of Tucson, Arizona," Water Resources Bulletin, vol. 9, No. 3, pp 598-606, 1973.

"Nitrates and Groundwater Management in the Fresno Urban Area," Journal AWWA, vol. 66, No. 3, pp 146-148, 1974.

"Regional Sewering and Groundwater Quality in the Southern San Joaquin Valley," Water Resources Bulletin, vol. 11, No. 3, pp 514-525, 1975.

"Salt Balance in Groundwater of the Tulare Lake Basin, California," in Hydrology and Water Resources in Arizona and the Southwest, vol. 5, Arizona Section AWRA, pp 177-184, 1975.

"Monitoring Groundwater Pollution," Proceedings of the International Conference on Environmental Sensing and Assessment, Groundwater Section, sponsored by EPA, WHO, and University of Nevada, Las Vegas, Nevada, September 1975, The Institute of Electrical and Electronics Engineers, Inc., vol. 1, session 9, No. 4, pp 1-6, 1976.

"Academic Training for Groundwater Quality Specialists," in Hydrology and Water Resources in Arizona and the Southwest, vol. 6, Arizona Section AWRA, pp 119-123, 1976.

"Monitoring Groundwater Quality: Methods and Costs," U.S. Environmental Protection Agency, Environmental Monitoring Series, Report EPA-600/4-76-023, with L.G. Everett, 1976.

"Monitoring Groundwater Quality: Monitoring Methodology," U.S. Environmental Protection Agency, Environmental Monitoring Series, Report EPA 600/4-76-026, with D.K. Todd, R.M. Tinlin, and L.G. Everett, 1976.

"Monitoring Groundwater Quality: Illustrative Examples," U.S. Environmental Protection Agency, Environmental Monitoring Series, Report EPA 600/4-76-036, with R.M. Tinlin, 1976.

"A Groundwater Quality Monitoring Methodology," Journal AWWA, vol. 68, No. 11, pp 586-593, with D.K. Todd, R.M. Tinlin, and L.G. Everett, 1976.

"Water Quality Variations for Pumping Wells," Ground Water, vol.

15, No. 2, pp 130-137, 1977.

"Protection of Groundwater from Nonpoint Sources of Pollution," Proceedings of Symposium on Drinking Water Quality Enhancement through Source Protection, American Chemical Society, Division of Environmental Chemistry, New Orleans, Louisiana, March 20-25, 1977, Ann Arbor Science Publishers, Inc., pp 257-273, 1977.

"Impact of Land Treatment of Wastewater on Groundwater," Proceedings of National Conference on Environmental Engineering, Kansas City, Missouri, July 10-12, 1978, University of Missouri-Columbia, pp 118-125, 1978.

"The 208 Planning Approach to Groundwater Protection - What is Wrong and What Can be Done About It?," Ground Water, vol. 17, No. 2, pp 148-153, 1979.

"Monitoring Perched Ground Water in the Vadose Zone," in Proceedings of the Symposium on Establishment of Water Quality Monitoring Programs, American Water Resources Association, Minneapolis, Minnesota, pp 134-149, with L.G. Wilson, 1979.

"Groundwater Quality Impact Determined from well Sampling," Arizona Department of Water Resources, Report No. 1, Proceedings of Deep Percolation Symposium, Scottsdale, Arizona, April 24-25, 1980, pp 74-84.

"Brine Pollution at Fresno - Twenty Six Years Later," Ground Water, vol. 19, No. 1, pp 12-19, with J.A. Krancher and G. Bisel, 1981.

"Hydrogeology of the Sierra Nevada Foothill Lineament Near Oakhurst, California," Ground Water, vol. 19, No. 2, pp 149-155 with S. Mack, 1981.

"Persistence of Brine Pollution in Fresno, California Aquifer," Journal Environmental Health, vol. 43, No. 6, pp 314-318, with J.A. Krancher, C.R. Auernheimer, and G. Bisel, 1981.

"Monitoring Groundwater Quality at State Permitted Sites in California," Proceedings of the Thirteenth Biennial Conference on Groundwater, Irvine, California, September 14-15, 1981, California Water Resources Center Report No. 53, pp 87-91, 1981.

"How Representative are Water Samples Collected from Wells?," Proceedings of the Second National Symposium on Aquifer Restoration and Groundwater Monitoring, Columbus, Ohio, May 1982, Water Well Journal Publishing Company, Worthington, Ohio, pp 117-128.

"The Occurrence of Trace Organic Chemical Constituents in Groundwater of the Salt River Valley," Proceedings of the Deep Percolation Symposium, Scottsdale, Arizona, October 1982, Arizona Department of Water Resources Report No. 4, pp 48-58.

"Limitations in Implementing Aquifer Reclamation Schemes," Proceedings of the Third National Symposium on Aquifer Restoration and Ground Water Monitoring, Columbus, Ohio, May 1983, Water Well Journal Publishing Company, Worthington, Ohio, pp 105-110.

"Groundwater Quality Studies in California," Proceedings of the ASCE Irrigation and Drainage Division Specialty Conference, Jackson, Wyoming July 1983, American Society of Civil Engineers, pp 183-191.

"Management of Groundwater Quality Beneath Irrigated Arid Lands," Proceedings of the Western Regional Conference on Groundwater Management, San Diego, California, October 1983, Water Well Journal Publishing Company, Worthington, Ohio, pp 77-84.

"Developing Groundwater Quality Monitoring Networks in California," Proceedings of the 15th Biennial Groundwater Conference, San Diego, September 23-25, 1985, University of California, Davis, pp 47-51.

"Proceedings of Symposium on Groundwater Contamination and Reclamation," Edited by K.D. Schmidt, American Water Resources Association, Tucson, Arizona, August 14-15, 1985.

"Are Humid Area Monitoring Concepts Applicable to Arid Lands?", Proceedings of Sixth National Symposium and Exposition on Aquifer Restoration and Groundwater Monitoring, May 19-22, 1986, Columbus, Ohio, pp 41-49.

"Hydrologic Aspects of Subsurface Drainage", Proceedings of the 1986 Regional Meetings, U.S. Committee on Irrigation and Drainage, July 30-August 1, 1986, Fresno, Calif., pp 55-64.

"Monitoring Groundwater Quality in the Southwest", American Society of Civil Engineers, Proceedings of Water Forum '86, World Issues in Evolution, August 4-6, 1986, Long Beach, Calif., 6 p.

"DBCP in Groundwater of the Fresno-Dinuba Area, California", National Water Well Association, Proceedings of the Agricultural Impacts on Groundwater Conference, August 11-13, 1986, Omaha, Nebraska, pp 511-529.

"Monitor Well Drilling and Sampling in Alluvial Basins in Arid Lands", National Water Well Association, Proceedings of the FOCUS Conference on Southwestern Groundwater Issues, October 20-22, 1986, Tempe, Arizona, pp 443-455.

"Effect of Irrigation on Groundwater Quality in the Southwest", Proceedings of the 1986 Regional Meetings, U.S. Committee on Irrigation and Drainage, October 22-24, 1986, Mesa, Arizona, pp 273-290.

"Effect of Irrigation on Groundwater Quality in California", with I. Sherman, Journal of Irrigation and Drainage Engineering, ASCE, Vol 113, No. 1, 1987, pp 16-29.

"Development of Public-Supply Wells in the Salt River Valley", in Proceedings of the Arizona Hydrological Society 1st Annual Symposium, Phoenix, Arizona, September 1988, pp 131-151.

"Contaminant Hydrology Associated with River Recharge of Sewage Effluent", with D.M. Esposito and D.G. Eaker, in Proceedings of Fourth Symposium on Artificial Recharge of Groundwater in Arizona, Tempe, Arizona, May 23-23, 1989, pp 1-20.

"Developing Integrated Management Strategies for Groundwater Production, Recharge, and Protection in the Salt River Valley", in Proceedings of the Arizona Hydrological Society 2nd Annual Symposium, Casa Grande, Arizona, September 1989.

"Problems with Groundwater Remediation Projects in the Southwest", Proceedings of the Arizona Hydrologic Society 4th Annual Symposium, Casa Grande, Arizona, September 12-13, 1991, pp 3-9.

"Hydrologic Factors Affecting Mobility of Trace Inorganic Constituents", Journal of Irrigation and Drainage Engineering, ASCE, vol. 119, No. 3, 1993, pp 600-612.

"Results of Twelve Years of Groundwater Monitoring at the SKFCSD Facility in Central California", with D. Michel, Proceedings of the Symposium on Effluent Use Management, American Water Resources Association, Tucson, Arizona, August 29-September 2, 1993, pp 203-212.

"Monitoring Perched Water in Arid Lands", in Handbook of Vadose Zone Characterization and Monitoring, edited by L.G. Wilson, L.G. Everett, and S.J. Cullen, Lewis Publishers, 1995 pp 639-655.

"Groundwater Monitoring Associated with Water Transfer and Banking Projects", Proceedings of the Symposium on Conjunctive Use of Water Resources: Aquifer Storage and Recovery, American Water Resources Association, Long Beach, California, October 19-23, 1997, pp _____.

ARVIN-EDISON WATER STORAGE DISTRICT

20401 BEAR MOUNTAIN BOULEVARD
Mailing Address: P.O. Box 175
ARVIN, CALIFORNIA 93203-0175
TELEPHONE (661) 854-5573

September 30, 2009

Ronald Jacobsma
Friant Water Authority
854 N. Harvard Ave.
Lindsay, CA 93247

RE: Friant Water Quality Standards

Dear Ron,

The San Joaquin River Restoration Settlement (Settlement) and subsequent legislation has generated a variety of water management issues as a result of losing water to the river and the pursuit of projects to mitigate those losses. The Settlement includes water management activities, such as recirculation, recovered water accounts, and water bank funding, some activities for which Friant Districts have expended a great deal of effort to fully vet and arrive at fair and equitable resolution of issues during mediation. It was also mentioned during those mediation sessions that water quality impacts would need to be addressed before projects such as these are ultimately implemented.

It has recently become apparent that Districts are proceeding ahead towards implementing water management projects, such as groundwater banking programs, without fully addressing the water quality issues that arise given a proposed discharge into the Friant-Kern Canal (FKC). Subsequently, we believe this issue needs to be addressed by Friant Water Authority (FWA) and/or the United States Bureau of Reclamation (USBR) so as to mitigate the potential impacts. While we applaud the determination of those Districts leading the way in this area, many of the programs have the potential to negatively, and disproportionately, affect Arvin-Edison Water Storage District's (AEWSD) water supply.

In addition, AEWSD understands the FWA (and if applicable Friant Water Users Authority) currently **does not** have an adopted document regarding water quality standards/guidelines. In addition, the USBR has a water monitoring policy only for accepting non-project water as provided for under Warren Act contracts. The purpose of that policy is to insure that water quality is protected and that domestic and agricultural water users are not adversely impacted by the introduction of other supplies. (In that regard, we note that the USBR Policy erroneously states that the Cross Valley Canal (CVC) water is physically the same as water from the San Joaquin River watershed, a notion FWUA dispelled while investigating a water quality exchange with MWD the last 5 years). Even though the policy for non project water is intended to protect water

quality, the programs anticipated under Settlement far exceed the relatively small programs we've seen to date administered under Warren Act contracts, and thus have a greater potential for impacts to AEWSD and others with FKC turnouts in the last reach of canal (could include other Districts with reverse pumps installed in the FKC).

With the recent construction of the bidirectional Cross Valley Canal (CVC) Intertie facility, as well as other turnout/turn-ins along the Friant Kern Canal, various sources of "non-Friant" water supplies may soon be proposed to be introduced into the FKC. AEWSD believes a FWA adopted water quality standard/guideline would be beneficial to all agencies wishing to convey water into or through the FKC, as well as protect those districts that do not wish to be impacted by degradation of its contract water supply. This sort of document would also be relevant in a successful recirculation program under the Settlement, as well as providing a reference document for other environmental documents involving the FKC. AEWSD looks forward to finding solutions to mitigate water quality impacts associated with reductions in FKC water quality, would welcome being part of the guideline process, and request that the process begin.

As you are aware, AEWSD has a contract supply for water from Millerton Lake, from the Friant-Kern Division of the CVP, and has a turnout at the terminus of the FKC. The water quality from this water supply project is some of the highest in the state. We assume water proposed to be conveyed through the CVC-FKC Intertie and other nearby facilities would ultimately be delivered to AEWSD because of the proximity and location of our turnout. If so, the impacts to AEWSD from degradation in FKC water quality would be immediate and could also be long-lasting, and would thus be unwelcomed if not mitigated, and subsequently are of great importance to us.

Sincerely,

Steve Collup
Engineer-Manager

Cc: David Nixon, Assistant Manager
Jeevan Muhar, Staff Engineer
AEWSD Board
Mike Jackson

ARVIN-EDISON WATER STORAGE DISTRICT

20401 BEAR MOUNTAIN BOULEVARD
MAILING ADDRESS: P.O. BOX 175
ARVIN, CALIFORNIA 93203-0175

TELEPHONE (661) 854-5573
FAX (661) 854-5213

EMAIL arvined@aewsd.org

October 23, 2009

Mr. Michael T. Inthavong
Department of the Interior
BUREAU OF RECLAMATION
1243 "N" Street
Fresno, CA 93721

RE: Draft Environmental Assessment (EA) - Delano-Earlimart Irrigation District and Rosedale-Rio Bravo Water Storage District Water Banking Program (Draft FONSI-09-92)

Dear Mr. Inthavong:

Thank you for your email dated October 21, in which you offered to extend the comment period (originally limited to eight business days) on the above referenced EA by seven additional days. Arvin-Edison Water Storage District's (Arvin-Edison) October 20 request was to extend the short initial comment period by 30 days. The seven day extension is unacceptable and subsequently the following is to set forth and reaffirm the basis for the requested 30 day comment period.

As your office is well aware, Arvin-Edison is very concerned about the water quality affects of this proposed banking program, and the precedent it may set for similar programs, on Arvin-Edison and others in the last reach of the Friant-Kern Canal (FKC). On September 29, 2009, Arvin-Edison staff met with Reclamation Area Manager Michael Jackson and members of his staff to explain in detail Arvin-Edison's concerns, and at which time Arvin-Edison provided supporting data of the water quality changes expected to be experienced by Arvin-Edison should this program go forward as proposed. Of particular concern was the higher "salt" constituents in the water supply proposed to be introduced into the FKC. Despite this and other efforts to inform interested parties of the problem, the draft EA makes no effort to address Arvin-Edison's water quality concerns, analyze the data Arvin-Edison provided, or analyze water quality data which is readily available from other agencies or sources. Rather, the EA simply and summarily states that "...there would be no significant adverse impacts to water quality. . .", with which Arvin-Edison disagrees.

Arvin-Edison must now expend significant resources and time to evaluate relevant data and provide comments so that Reclamation can determine whether the above statement is correct and whether it is appropriate for Reclamation to issue the proposed Findings of No Significant Impacts (FONSI). Relevant data may suggest however that impacts are significant and must be mitigated to address Arvin-Edison's concerns.

Aside from the need for additional time to evaluate the draft EA and provide meaningful comments for the reasons noted above, we note that the Council on Environmental Quality's (CEQ) regulation require that when issuing a FONSI, a 30 day comment period must be provided, where, among other reasons, "the nature of the proposed action is one without precedent" (40 CFR 1501.4(e)(2)). This proposed action is truly without precedent for several reasons. First, this banking program would be the first use of the newly constructed Cross Valley Canal/Friant-Kern Canal Intertie (Intertie), for purposes other than those evaluated under the Intertie CEQA/NEPA conducted as a part of the Intertie construction. The use of the Intertie has not been previously approved for programs such as these ***because*** of the potential water quality impacts to Arvin-Edison. Secondly, the proposed program is among the first of those contemplated under the San Joaquin River Restoration Settlement and, as such, will set a precedent for all subsequent programs that follows. Thirdly, the Intertie point of discharge into the FKC (for water proposed to be returned to DEID) is less than 100 feet upstream of Arvin-Edison's turnout, and as Arvin-Edison is the last contractor on the FKC, the discharges into the FKC at the Intertie location would effectively cause a substitute water supply, of a much poorer water quality, to be provided to a contractor (Arvin-Edison), from a source different than that provided under its long-term contract with Reclamation, and without the affected contractor's consent. We know of no other circumstance where Reclamation has engaged in this type of activity without consent of the affected contractors. **For this reason alone, Reclamation is required to provide the affected contractor's at least a 30 day comment period.**

Accordingly we re-affirm our request that a 30 day extension be provided for the comment period, at least for Arvin-Edison. If for any reason this request cannot be accommodated, please provide the basis for Reclamation's decision well in advance of the allowable EA comment period deadline currently set for October 29, 2009.

Sincerely,

FOR

Steve Collup
Engineer-Manager

cc: Michael Jackson, USBR Fresno
Rena Ballew, USBR Fresno
Board of Directors
Ernest Conant, Esq.
Jeevan Muhar, Staff Engineer

SCC:sjcollup\Inthavong.Micheal.DEID.RRB.EA.comments.extension.request.10.09.doc

ARVIN-EDISON WATER STORAGE DISTRICT

CANAL INTERCONNECTIONS WITH FRIANT- KERN CANAL (FKC) CROSS VALLEY CANAL (CVC) & KERN RIVER